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# Monthly ABSTRACTS Bulletin



January, 1917

Issued by the Research  
**EASTMAN KODAK**  
Rochester, New



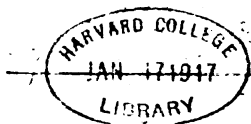
# Monthly **ABSTRACT** Bulletin



January, 1917

Issued by the Research Laboratory  
**EASTMAN KODAK COMPANY**  
Rochester, New York

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~~FA 6630.347.15~~  
✓



*J. F. Lawrence*

*Rebent*

FA 5.32.50(2,8-9,3,1-16) 1917  
(4-5) 1918-19



# Monthly Abstract Bulletin

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Vol. 2

No. 8



# Photography

A Simple Emulsion for Matte or Glossy P. O. P.  
Phot. J. Amer., 1916, p. 534

C135

About Focusing

B. J., 1916, p. 647

F1-031

The author (probably C. W. Piper) points out the great advantages of accurate focusing in portraiture by means of which a considerably larger aperture can be used with satisfaction than if the focusing is done carelessly. Very practical suggestions are made for the conditions of focusing with different types of lenses and especially when using anastigmat lenses for portraiture.

Some Experiments and Notes on Reducers C. W. Piper H1, 1655  
B. J., 1916, p. 634

Mr. Piper has tried the substitution of ammonium thiosulphate for hypo in the Farmer reducer. He found no difference except that the hypo formula was quicker in action, probably owing to the decomposition of the ammonium thiosulphate. He then tested potassium persulphate in the place of ammonium persulphate as a reducer and found it very satisfactory. Potassium persulphate is not deliquescent, can be used in weaker solution than ammonium persulphate, and does not seem to refuse to act in the way that the ammonium salt sometimes does. Mr. Piper finds the reducer recommended by Mr. W. J. Smith, referred to in the December *Abstract Bulletin*, satisfactory.

The Development of Bromide Papers B. T. J. Glover J4  
B. J., 1916, p. 627

The author points out that at the beginning of development the contrast of a bromide paper increases but that after the maximum contrast has been reached, the print does not gain contrast but continues to increase in density. He considers that a print should be exposed to such a degree that the requisite amount of density will be reached as soon as the maximum amount of contrast is obtained in development and he recommends development by factor. The letter is written entirely from the point of view of modern sensitometry.

Antimony Toning of Developed Pictures L. Strasser J84  
J. Soc. Chem. Ind., 1916, p. 1035

A bleached silver print gives stable red brown tones with a .05% solution of sodium thioantimonate. Simultaneous or subsequent sulphiding leads to colder brown tones.

A Note on the Use of Liver of Sulphur for Toning Bromide and Gaslight Prints J84  
B. J., 1916, p. 606

B. J., 1916, p. 637

The combination of a solution of tellurium dioxide or of one of tellurous or telluric acid with an alkaline sulphide such as soda sulphide has been patented in been patented also in Germany by A. Spitzer and L. Wilhelm, Vösendorf, Austria. Germany by the firm of E. Schering, D. R. P. 290,720. A somewhat similar process has According to this patent, No. 292,352, ordinary hypo (sodium thiosulphate) or ammonium thiosulphate is used in combination with tellurous or telluric acid or preferably with the sodium salts or one or other of these acids.

## Cabinet Experiments in Color Photography

G. E. Brown K

B. J. Color Supplement, 1916, p. 47

The editor concludes his description of the lecture experiments referred to in the November *Bulletin*.

## Color Cinematography

A. S. Cory K06

Mot. Pict. News, 1916, p. 2887

Commences a comprehensive and valuable series of articles dealing with the many patented methods for producing motion pictures in natural colors.

## The Bleach-Out Process

K/93

B. J. Color Supplement, 1916, p. 45

The full text of the specification of the patent 20396, referred to in our patent abstracts. The editor of the B. J. remarks that the specification, by its enumeration of the difficulties attaching to the making of a bleach-out three-color paper, probably serves the purpose of turning experimenters from the process. The bleach-out process is one which has been the subject of research and experiment out of all proportion to the degree of success which has been attained; one might almost now say out of proportion to the possibility of success which the process offers.

## The Genesis of the Camera

019

B. J., 1916, p. 618

Very interesting article on early forms of the camera-obscura, the first distinct account of which was given by Leonardo da Vinci. Portable cameras were described in 1702.

## A Plea for the Portrait Album

A. H. Baird 031

B. J., 1916, p. 609

## Some Notes on Halation

E. A. Salt 041-1685

B. J., 1916, pp. 620 and 636

A general discussion of the subject of halation written in a clear and interesting manner. The various methods of stopping halation by backing and substrata are dealt with and there is a historical note on the origin of the double-coated plate. A description is given of the best method of printing through a negative of an interior where detail is present in the windows but has become buried owing to over-exposure.

There was a very interesting discussion after the reading of this paper at the Croydon Camera Club. Among other points brought up, Mr. Terry disagreed with the lecturer's statement that orthochromatic plates exposed behind a deep filter were more prone to halation than when exposed without a filter, and stated that his experience was the opposite. Mr. Piper agreed with Mr. Terry. The experience of the Laboratory is that there is much more halation when using a strong color filter and that this increase in halation is due to the fact that plates are considerably less opaque to the longer wavelengths so that more light penetrates to give that halation.

**Decennia Practica**

B. J., 1916, p. 638

045

**Lantern Slides, I.** This gives formulæ for various developers and for the making of lantern slides by the ozobrome process.

**Decennia Practica**

B. J., 1916, p. 649

015

**Lantern Slides, II.** This gives a number of hints and formulæ on the toning of slides. In particular, it deals with the method of bleaching with iodine and dyeing the silver iodide produced.

**An Enlarging Tip**

B. J., 1916, p. 606

046

The suggestion is made that in combination printing instead of removing the bromide paper from the easel while the negative is being changed, a light-tight flexible blind should be fitted in front of the paper which can be dropped over it while changing the negative.

**Decennia Practica**

B. J., 1916, p. 622

046-G8

**Making Enlarged Negatives.** This gives formulæ for the various methods for producing an enlarged negative direct from a smaller one designed to render the making of the enlarged negative a more speedy and economical operation.

**Photographs on Mirrors, Backed with a Silver Deposit**

Phot. J. Amer., 1916, p. 532

048

Detailed instructions and formulæ for silvering collodion transparencies on glass so as to give a mirror backing to them.

**Decennia Practica**

B. J., 1916, p. 611

0582

**Night Photography.** This includes such work as the making of firelight and candlelight portraits and the development of negatives of night subjects in which it is necessary to secure intense lights free from halation at the same time as adequate detail in deep shadows.

**Tinting Motion Picture Film**

0645

Mot. Pict. News, 1916, p. 3696

An article prepared by the Research Laboratory of the Eastman Kodak Company.

**Family Tree of the Coal Tar Developers**

D. R. Furness 1531

Phot. J. of Amer., 1916, p. 536

Chart showing relationship of the more common developers.

**Developer Poisoning**

15315

B. J., 1916, p. 644

In reply to a correspondent, two prescriptions suggested by Dr. Beers are given.

**A Single Solution, Non-Acid,  
Permanganate Bleacher**

T. H. Greenall 1661-J84

B. J., 1916, p. 621

The following formula is suggested: Solution of potassium permanganate (2 grains in 1 oz.) 4 to 5 fluid ozs., common salt, 1 oz., water to make 20 ozs. The prints do not bleach out but the image changes to brown-gray and after bleaching the prints must be cleared in the following bath: Dilute hydrochloric acid (1 in 5) 2 fluid ozs., sol. of common salt (1 in 10) 1 fluid oz., water to make 20 ozs. To each ounce of above solution add, *at time of using*, not more than 20 or 30 minims of a 1 in 5 solution of sodium sulphite. The prints can be sulphided after clearing and washing.

**A Photographic Ink**

P. E. O. 1698

Amat. Phot., 1916, p. 410

Potassium iodide, 10 parts; iodine, 1 part; gum arabic, 1 part; water, 30 parts. The ink bleaches and leaves the writing as white on the dark ground of the print.

**Local Control in Printing of Negatives**

E. Hinge 12

B. J., 1916, p. 651

Suggested method for evening up the printing of a negative — by dabbing plasticine on the back.

**Developing Machine for Portrait Film**

2543

B. J., 1916, p. 643

With regard to the machine designed by J. C. Monro, it is mentioned that jackets are provided on the tray holding the developer for the purpose of introducing hot and cold water as required by the temperature of the dark room so that although the machine is not designed primarily for development by time, it can be so used.

**Luxury in Dark Room Lighting**

255

Phot. J. Amer., 1916, p. 499

An article from the Research Laboratory of the Eastman Kodak Company.

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Speed Testing of Shutters by Means of an Inclined Plane L. G. Abingdon 262  
Phot. Focus, November 14, 1916, p. 325

Optical Glass: A Brief Historical Review B. J., 1916, p. 607 263  
Deals chiefly with the earlier development of the art.

A Paper That Gives Green Prints /81  
Phot. J. Amer., 1916, p. 517

Paper coated with a 2% gelatine solution is sensitized in: potassium bichromate, 15 grs.; magnesium sulphate, 25 grs.; water 1 oz. After exposure the print is washed and developed with a wad of cotton moistened with pyrocatechin, 5 grs., water 1 oz.

New Method of Picture Production J. M. C. Grove /87  
Amat. Phot., November 6, 1916, p. 369  
From a water soaked pinatype plate a plaster cast is made. Pencil "rubbings" are then made from the cast.

Mr. W. J. Wilson, the originator of the Paget Prize plates and for many years director of the Company, died November 17th.  
B. J., 1916, p. 639

The Adaptability of the Eye to the Illumination B. J., 1916, p. 648  
An article based on the work done in the Research Laboratory, dealing with the change of sensitiveness of the eye under different conditions of illumination.

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## Photo-Engraving

Photography as a Graphic Art 07  
Printing Art, November, 1916, p. 219

A note on the exhibition of photography recently held by the American Institute of Graphic Arts.

The Preparation of Copy for Half-Tone Engraving H. W. Leggett 07001  
American Printer, December 5th, 1916, p. 62

Points out that the best kind of photographic print is a black or dark brown tone on a velvet or glazed surface.

Deep Etching Ink 07006  
Process Work, November, 1916, p. 71

Various formulæ are given.

## Etching Glass

07006

Process Work, November, 1916, p. 72

Etching by vapour of hydrofluoric acid and by its solution in water are described, and method of making suitable resists by photographic printing.

## New Re-Etching Process

W. J. Wilkinson 07007

American Printer, November 20, 1916, p. 65

The method consists in making from a continuous tone negative an additional bichromate print on the metal plate, this serving as a sort of automatic etching resist for the shadows.

## Methods of Mounting Electros

07008

Process Work, November, 1916, p. 68

The advantage of metal over wood for mounting is discussed and methods for sweating work on to metal base described.

## Printing from Zinc without Offset

S. H. Horgan 07009 723

Inland Printer, December, 1916, p. 348

The author states that the principal reason why the rubber offset is used is that the delicate texture of the grain which is necessary to retain the moisture when printing lithographically is soon destroyed in printing direct.

## School of Photogravure

Carl von Nemethy 0713

American Printer, November 20, 1916, p. 42

Owing to the dearth of competent workers for the rotary photogravure process, it is suggested that a school should be established.

## The Making of Paper

1412

Printing Art, November, 1916, p. 197

A series of views in the mill of the D. B. Rising Paper Company, showing the various processes in the manufacture of paper.

## The Photo-Engraver's Union and Trade Education

70

Inland Printer, December, 1916, p. 338

A plea for the proper treatment of the apprentice as regards his technical education and advocating the study by both employer and employee of economics and labor questions.

## Improving Business Conditions in Printing Industry

Photo-Engravers' Bulletin, November, 1916, p. 7

The United Typothetae and Franklin Clubs propose to conduct a three years campaign to get the printing and allied industries thoroughly organized with a view to making the practices of the industry uniform and stable.

# Physics

## The Mobility of the Negative Ion

S. Ratner ✓

Phil. Mag., 1916, p. 441

The author measures the mobility or velocity of negative ions, positive ions, and free electrons in various gases under different pressures and electrical fields, reaching some interesting conclusions.

## The Equilibrium of the Magnetic Compass in Aeroplanes

S. G. Starling

Phil. Mag., 1916, p. 461

A mathematical discussion of the effect of the various movements of an aeroplane upon a magnetic compass carried therein.

## On Multiple Reflexion

L. Silberstein

Phil. Mag., 1916, p. 487

An elegant solution of the problem of reflexions at any number of plane mirrors by means of vector analysis.

## Report of the Committee on Progress

Trans. I. E. S., 1916, p. 705

A review of advances in lighting and related subjects in physics and photography during the year.

## Optic Projection as a Problem in Illumination

J. A. Orange

Trans. I. E. S., 1916, p. 768

A study of the best conditions for optic projection with a special discussion of magic lantern and moving picture projection.

## The Luminous Efficiency of the Solar Radiation

H. E. Ives

Trans. I. E. S., 1916, p. 888

By recalculating Kimball's data, Ives finds that luminous efficiency of the sun is 13.8 per cent. This agrees with the theoretically determined maximum efficiency of a black body at temperature 6500° absolute.

## Scientific Research and Our Future Sources of Energy

D. Robertson

Electrician, 1916, p. 188

An abstract of Chairman's address, Electrical Engineers.

## Frequent Bursting of Hot Water Pipes

F. C. Brown

Phys. Rev., November, 1916, p. 500

The writer proves from laboratory experiments with glass tubes that boiled water does not freeze so readily, but freezes more solidly than unboiled, hence accounting for the bursting.

Temperature and Blackening Effects in Helical Tungsten Filaments B. E. Shackelford

Phys. Rev., November, 1916, p. 470

The writer shows that the interior of such a filament is twice as bright as the exterior; that this is not a temperature effect, but due to the internal reflections, which make the interior radiate as a black body.

The Weber-Fechner Law and Photometric Observations P. P. Lazarev  
J. Russ. Phys. Chem. Soc. XLVIII, p. 293

From considerations based on the Weber-Fechner law it is concluded that the limiting accuracy possible in photometric settings is 0.1%.

Counteracting Static Electricity in Belts S. Baker  
Brass World, 1916, p. 328

Consists of a comb made of number 6 copper wire with the teeth of number 24 copper wire, 3" long and 1" apart. This comb is connected to a similar comb by number 24 wire. One comb is placed over the object to be discharged and the other near a grounded pipe, so that the points are 1/16" from the ground and the object.

A New Spectrum Map Paper R. P. Anderson  
J. Ind. Eng. Chem., 1916, p. 1146

A convenient paper for mapping emission spectra, in use in Cornell University. It would likewise be suitable for mapping absorption spectra when no great accuracy is required.

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## Photochemistry

The Production of the Lower Chlorides of Methane C. W. Bedford  
from Natural Gas

J. Ind. Eng. Chem., 1916, p. 1090

In the photo-chlorination a white flame arc light was used as source and found satisfactory. Results of chief interest photochemically are: (1) at low temperatures, each of the four chlorides of methane form in turn from the preceding member of the series chlorine showing a slight preference for chlor-methane over methane itself. (2) The lower the temperature at which reaction takes place, the more actinic the light required to maintain the reaction for a given concentration of free chlorine. (3) Water does not hinder the reaction but accelerates it by removal of reaction products. (4) Ammonia or similar nitrogenous bodies are powerful negative catalysts (as found by Chapman and Burgess for the interaction of hydrogen and chlorine in light). The reaction is stopped until a high concentration of chlorine overpowers the negative catalyst, when it proceeds explosively.

Action of X-Rays on Iodine and Starch Iodide H. Bordier  
J. Soc. Chem. Ind., 1916, p. 1058

The decolorization of starch iodide in water on exposure to X-rays is stated to be due to the ionizing action of the rays on the colloidal solution.

# General and Inorganic Chemistry

Constitution of Solids and Liquids Part I

I. Langmuir

J. Amer. Chem. Soc., 1916, p. 2221

A long paper of remarkable interest anent a bold chemical invasion of the "molecular physics" protectorate. At once a review, a critique and an original thesis, it is perhaps impossible to abstract this paper adequately. Starting from the work of the Braggs on crystal structure by X-ray spectrography, it is first contended that only *polar* compounds have been studied, which are not representative of compounds in general. These polar compounds the author considers built up of atoms bound by secondary or residual valency. The whole crystal must be regarded as a single molecule. Solid *non-polar* compounds he considers consist of "group molecules" in which groups the atoms are bound by primary valency but which groups in turn are bound by secondary valency to form a large "crystal molecule," which is in principle the theory of Wyrouboff modernized. It is contended that there is no present justification for dividing interatomic or intermolecular forces into *physical* and *chemical* forces. It is better to regard all such forces as purely *chemical*. Hence, evaporation, condensation, solution, crystallization, adsorption, surface tension, etc., should be regarded as typically chemical processes, and the object of the paper is to show that present chemical knowledge is directly applicable to their study. Since solid substances in general are held together by secondary rather than primary valency, there are few limitations to the number of compounds capable of existence in solid state. Most of these have compositions which could not be predicted from the ordinary rules of valency. It is concluded that the attractive forces (affinity) between atoms reach a maximum intensity when the distance between adjacent atoms in solids is increased by about  $0.6 \times 10^{-8}$  cm. (10%-30% of normal interval). Surfaces of solids contain more potential energy than corresponding arrays of atoms in the interior. This intense surface field of force (unsaturated chemical affinity) is one of the causes of condensation and evaporation phenomena. Surfaces of solids are inelastic as regards impinging molecules, a highly interesting differentiation between reversible and irreversible evaporation. Condensation, etc., is made, and adsorption connected with the hysteresis in the evaporation-condensation process. Poisoning of contact catalysts is attributed to mon-atomic "stable" films over the surface. A law of "surface action" analogous to "law of mass" action is proposed in regard to heterogeneous reactions. It is applied to heterogeneous gas reactions and enzyme reactions. The second installment will deal with the structure of liquids and will endeavor to replace the vague chemical information on the *shapes*, cross sections, lengths, etc., of the group molecules of liquids.

Studies in the Measurement of the Electrical Conductivity of Solutions at Different Frequencies

W. A. Taylor and S. F. Acree

J. Amer. Chem. Soc., 1916, p. 2396

Various types of alternating current generators are discussed. Vreeland oscillators give pure sine-wave and variable frequency.

Investigations of Bridge Methods, Resistances, Cells, Capacities, Inductances, Phase Relations, Precision of Measurements, and a Comparison of the Resistances Obtained by the Use of Inductance and Capacity Bridges W. A. Taylor and S. F. Acree  
J. Amer. Chem. Soc., 1916, p. 2403

True and Apparent Resistances, Voltage, Apparent Capacity, Size and Character of Electrodes, Ratio of Inductance Changes to Resistance Changes, and Relation of Induction and Capacity to Frequency W. A. Taylor and S. F. Acree  
J. Amer. Chem. Soc., 1916, p. 2415

Sodium Nitrate Industry in Chile  
J. Soc. Chem. Ind., 1916, p. 1058

The Exportation for the year ending June 30, 1916, while being 70% above that of the preceding year, is still lower than that before the war.

Solutions of Selenium and Tellurium in Absolute Sulphuric Acid E. Noles  
Chem. Abst., 1916, p. 1822

Selenium Forms with Sulphuric Acid the compound  $\text{SeSO}_3$ , which tends to polymerise to a double molecule.

Design of Acid-Resisting Iron Apparatus N. Swindin  
Met. Chem. Eng., December 1, 1916, p. 647

The Alloys used generally consist of Iron and Silicon. They are very hard and brittle, these properties increasing as the silicon content increases. Socket joints in pipes are preferred to flanged joints. No sharp angles should be used; i. e., plane surfaces should be connected by curves of large radius. Castings heavier than a few hundredweights should be avoided, also those greater than 4 feet in diameter or depth. Webbing should be avoided.

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## Colloid Chemistry

✓ The Analysis, Purification and Some Chemical Properties of Agar-Agar C. R. Fellers  
J. Ind. Eng. Chem., 1916, p. 1128

A Valuable Paper, though chiefly of interest in Bacteriology, contains much of importance to photographic and colloid chemistry. The sources, preparation and composition are discussed. Analyses of sixteen samples of widely different origin show remarkable uniformity in composition. High ash or silica content indicates inferior product. Considerable nitrogenous matter in all samples; part of nitrogen directly assimilable by micro-organisms. A method of purifying agar is described. Product in shreds is worked with dilute acetic acid, dissolved and precipitated while hot from 5% solution by large volume of acetone or alcohol; much nitrogen is thus removed. Solutions of agar will solidify at all concentrations of hydrochloric acid and sodium hydroxide between 4.5% hydrochloric acid and 5% sodium hydroxide. Autoclaving under one atmosphere narrows the range.

Absorption of Coloring Matters by  
Charcoal and Silica

E. Knecht and E. Hibbert

J. Soc. Chem. Ind., 1916, p. 1008

The Absorption of Basic Dyes by Animal Charcoal is shown to depend to a considerable degree on the nitrogen and oxygen content of the charcoal. Only hydrated, not anhydrous, silica is capable of absorbing coloring matters.

Increasing Stability of Bitumens by Introduction of Colloids

Met. Chem. Eng., November 15, 1916, p. 606

U. S. Patents 1198769 and 1198955-1916 have been granted Clifford Richardson for a process consisting in the introduction of clay in colloidal solution into the bitumen so that when the water is driven off the product has an increased stability. The products vary in strength, a range from materials resembling hard rubber to stable plastic mixtures suitable for paving and other uses.

## Organic Chemistry

On the Miscellaneous Vegetable Fibers as the  
Raw Material for Celluloid

H. Nishida 1411

J. Ind. Chem. Eng., p. 1096

The author treated nineteen kinds of fibers, some of which are peculiar to Japan. The fibers were made into tissue paper by the usual method of paper making. Some fibers were bleached, others unbleached. It was found that "wet beating" gave much better results than "free beating". The copper number (Schwalbe), the acid number (Vieweg), and the oxycellulose content were determined on each raw material (as tissue paper). The oxycellulose content was determined by the author's volumetric method, using titanous chloride solution and methylene blue. The results are tabulated:

In general, fibers containing the largest impurities and those which had been vigorously treated chemically gave the highest results. Capillary absorption is of great importance, the thinner the paper, the better the penetration of the acid. In practice, a thickness of 15-40 gm. per sq. m. is moderate; for "free beaten" fiber the limit is 15-30 gm. per sq. m.; for well "wet beaten" the limit may be as high as 200 gm. per sq. m. The author fully discussed his working formula for nitration in an article published in "Le Caoutchouc & La Gutta-Percha", March and April, 1914. The formula is in %;  $\text{H}_2\text{SO}_4$  64.0-65.5;  $\text{HNO}_3$  15.0-16.5;  $\text{HNO}_2$  0.80-1.0, Water 18.0-19.0. The nitrating time and temperature must be varied according to the fibers. The author found that  $\text{Temp. (}^\circ\text{C)} \times \text{Time (min.)} = \text{Constant}$  to produce the same degree of nitration, where the constant varies according to the nature of the fiber; e. g., 1500 for cotton or pure cellulose, 2100 for linen and allied fast fibers, 2400 for wood and straw cellulose, 2700 for mechanical wood and fibers most difficultly nitrated. Further the thickness must be taken into consideration.

The above holds good up to 40 gm. per sq. m. When  $D$  ( $D$ =gm. per sq. m.) is greater, then:-  $\text{Constant} \propto 0.9\sqrt{D/40}$  - up to  $D = 100$  gm.  $\text{Constant} \propto 0.85\sqrt{D/40}$  - up to  $D = 200$  gm. In table II the following results are given: Yield % nitro-compound, solubility in 86% camphor-alcohol solution, viscosity (Engler), kind of celluloid made, stability heat test, flash point  $^\circ\text{C}$ , tensile strength, bending stress. The camphor-alcohol solution is made up and used as follows: 36 gm. pure camphor crystals are dissolved in 126 cc. absolute alcohol of sp. gr. 0.79425. Exactly 2 gm.

of the nitro-compound are dissolved in 100 cc. of the solution with careful agitation. This is allowed to stand for one day in a stoppered 100cc. flask. Take 25cc. from the clear part and evaporate to dryness at about 45-50° C. The residue is weighed and the camphor and nitro-compound calculated. (This method is open to criticism on account of the residual solvent and loss of camphor.) Among the conclusions reached, the author finds that "Strength is apparently proportional to viscosity", and that "The higher elasticity is always accompanied by the higher viscous nitro-cellulose-galette."

The author has shown that the output of celluloid may be calculated as follows:  $(T \times \text{Yield}\% \times 1.959)$  where T is the original amount of fiber nitrated. The amount of fiber required for each Kg. celluloid may be calculated: 1 divided by (yield of nitro-compound  $\times 1.959$ .) Now, if the yield and the price of two different fibers are Y, P and Y'P' respectively, then we have the total cost per Kg:  $P/1.959 Y$ , and  $P'/1.959 Y'$ , or their value has the ratio of  $PY'/P'Y$ . If the ratio is greater than one, the first fiber is more costly, if less than one, the latter. From his results the author evaluates the raw fibrous materials as follows: First Class, Unbleached mercerized cotton; tissue from white rags and fish nets; Second Class, Bleached mercerized cotton; tissue from colored rags; tissue from linen fibers; Third Class, Papers from bast fibers; weavers' waste yarn, scoured and bleached; Fourth Class, Bamboo tissue as free from adulteration as possible and wet beaten; Fifth Class, Chemical wood fiber, and straw, as free from knots as possible, Sixth Class, Mechanical wood fiber mixed with a little cotton.

Fume Poisoning from Nitric and Mixed Acid L. A. DuBois 1511  
J. Ind. Eng. Chem., 1916, p. 1162

Describes the Pulmonary Edema of Severe Cases of Nitrous Fume Poisoning. In such cases chloroform is given at once (fifteen drops in a tablespoonful of aromatic spirits of ammonia shaken up with three-quarters of a glass of water and taken at intervals during half an hour.) This affords relief, though it does not arrest the development of the edema. It is noted that experienced workers take only short breaths when in an atmosphere containing oxides of nitrogen, in order that any attack may be localized in the upper part of the lungs. Respirators have not proved very successful; the best results have been obtained with the use of a "Filtros" sponge moistened with 20% caustic potash. For prevention, good results were obtained by atomizing ammonia into the atmosphere, but the best method seems to be to install powerful aeroplane propellers which can be controlled from the outside of the building.

Care of Workmen Employed in the Manufacture of Aniline and Benzol Products A. B. Mitchell  
J. Ind. Eng. Chem., 1916, p. 1161

Rules for Plant Workers. With reasonable precautions there is little danger of serious cases of poisoning.

The Processes of the Organic Chemical Industry as Used in the Manufacture of Intermediate Products A. H. Ney and D. J. VanMarle  
Met. Chem. Eng., November 15, 1916, p. 585

Article on Reductions with Large Scale, mentioning the use of iron, tin, zinc, and sodium sulphide. The most valuable part of this review is contained in the section on apparatus.

Formation of Toluene from Xylene  
and Benzene

F. Fischer and H. Niggemann

J. Soc. Chem. Ind., 1916, p. 1006

Xylene, on boiling with 2% to 4% of aluminum chloride for two hours, yields 12% of toluene together with some benzene and higher homologues.

Nitration of Toluene to T. N. T.

I. W. Humphrey

J. Ind. Eng. Chem., 1916, p. 998

Tabulation of Experiments in which the concentrations and proportions of acids, time, and temperature of reaction are varied and correlated with the yield of trinitrotoluene obtained from crude mononitrotoluene.

Census of Artificial Dyestuffs used in the U. S.

T. H. Norton

J. Ind. Eng. Chem., 1916, p. 1039

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## Patent Abstracts

### U. S. Patents

1205223

H. E. Kock MD11

An Apparatus for Coating Sensitive Emulsions on Plates or Films. The emulsion is fed from a temperature-controlled reservoir through a long, narrow slot to a brush which spreads it upon the plates or films mounted on an endless carrier. The carrier is inclined vertically about 10 degrees, so as to form a bead or puddle adjacent the brush to avoid brush marks.

1207513

W. H. Doherty K2115

A Camera for use in Color Photography. A pair of double reflecting rhomboidal prisms are arranged to slide in paths at right angles to each other, each path being at 45 degrees to the axis of the lens. By a suitable actuating mechanism each prism is moved so as to reflect light to a color sensitive plate through a proper filter, and at one stage of the operation direct rays from the lens act upon a third plate.

1204401

A. D. Brixey K324

A Screen upon which Pictures may be Projected. It is especially adapted for the viewing of colored projected pictures even in daylight. It consists of glass coated with an intimate mixture of red, blue and green starch particles in such proportion as to give the effect of white and a layer of ground glass.

1206000

L. Kitsee K/33

A Process of Making the Color Screen Elements for Auto-Chromes. Cellulose is dissolved in acetone or amyl acetate and suitably colored. It is then sprayed from a considerable height into a steam atmosphere, so as to break it up into minute colored globules, which are used in place of the conventional starch grains.

1175224

W. F. Bleecker K/33

**Ceramic Method of Producing Color Screen Plate.** For the preparation of the screen the color elements are obtained in spherical granules of a transparent and fusible substance, such as glass, by running a fine stream of the powdered material into a hot-air blast which heats the granules to the melting point, when they become spherical by the action of surface tension, while the separating action of the blast prevents coalescence. The spherical granules are sifted to uniform size and then mixed in the desired proportion of the colors.

1207527 W. F. Fox, Assigned to Kinemacolor Co. of America K/43

**A Process of Color Photography.** Two negative images are made, one taken through a green filter and one through a red filter. One of these is printed upon positive material and toned to a color complementary to that of the screen through which the corresponding negative was taken. Next the other negative is printed on the positive material in registry with the toned image thereon and the second positive image is dyed a color complementary to that of the screen through which its negative was taken. The patentee states that the method may be used either where the two positive images are upon the same side of the positive film stock or where they are formed upon opposite sides. The second negative is printed over the first positive image on the previously exposed positive emulsion without first developing and resensitizing.

1203802 J. J. C. Smith, Assigned to P. M. Hammalian A07336

**An Etching Machine** in which the etching fluid is agitated by compressed air bubbled through a false bottom. The plate is held face downwards and a handle is provided by means of which the plate can be dashed into the mordant occasionally.

1207042 F. W. Hochstetter, Assigned to H. P. Patents 0632 G5  
and Processes Company, Inc.

**A Combined Developer and Fixer** adapted to be absorbed by a strip of felt, which is wound up with motion picture film immediately after exposure so as to develop and fix the film in the shortest possible time after the pictures are taken.

1207506 G. R. Cornwall 07004

**A Method of Printing** by the so-called "Vandyke" Process, in which the original is rendered adhesive; this allows an incorrect portion to be cut away and substituted by the correction.

1205367 J. A. MacBride 1212

**A Motion Picture Film** provided at its marginal portions, just inside the usual perforations, with a series of spaced projections forced out of the film body so that when the film is coiled up the various convolutions will be spaced, thereby avoiding abrasion.

1204141 C. Ellis 1511

**A Process of Making Sulfur Trioxide** by passing sulfur dioxide and oxygen into contact with a catalyst which includes chromium oxide and antimony oxide.

- 1204142 C. Ellis 1511  
A Process of Making Sulfuric Anhydride, by passing a mixture of sulfur dioxide and air into contact with porous masses of tin oxide mixed with chromium oxide to act as a catalyzer.
- 1204143 C. Ellis 1511  
A Catalyst for use in making sulfur trioxide consisting of chromium and tin oxides.
- 1205723 A. M. Fairlie 1511  
The Production of Sulfuric Acid by the Chamber Process. The percentage of sulfur dioxide is determined in the gases of the chamber near the Glover tower, in the burner gases, and in the chamber gases near the Gay-Lussac tower. From this data the relative amounts of sulfur dioxide and nitrogen oxides are so proportioned as to permit the maximum recovery of nitrogen compounds in the Gay-Lussac tower.
- 1205724 A. M. Fairlie 1511  
A Method for Rapidly Determining Sulfur Dioxide in gases used in the chamber process of making sulfuric acid, the object being to avoid errors due to oxides of nitrogen. The gases are passed into a solution containing a standard iodine solution with a starch indicator, sodium acetate and acetic acid.
- 1195075 T. C. Oliver, Ar. Chemical Construction Co. 1511  
Method of, and Apparatus for, Concentrating Acids. The acid is passed downwards through a tower, hot gases being passed upwards.
- 1206062 and 1206063 F. S. Washburn 1511  
A Process of Making Nitric Acid and Ammonium Nitrate by oxidizing ammonia in the presence of a catalyst. The gases are conducted so rapidly that a small percentage of ammonia is left uncombined after the action of the catalyst, in order to minimize the splitting up of the intermediate oxides of nitrogen into their elements.
- 1197019 H. Essex and B. T. Brooks 1516  
Process for Making Amyl Acetate. Cf. This Bulletin, November, 1916, p. 13.
- 1205822 A. P. H. Trivelli 1699  
A Motion Picture Film which has been renovated and the scratches therein eliminated by varnishing with a mixture of cellulose ester, drying oil and salts of a resin acid, the varnish having substantially the same coefficient of refraction as the film.
- 1206253 J. B. Roan 2234  
A Lantern Slide for Exhibiting a Watch Movement. It includes two glass plates, between which the watch skeleton is held by pins which extend into holes in one of the glass plates.
- 1206700 G. F. Haskins 2234  
A Lantern Slide for Exhibiting Watch Movements. The watch skeleton is held between parallel glass plates by fastenings which engage the watch stem.

1206984 A. C. R. Bloom 2235

A Projection Apparatus for Successively Exhibiting the Pictures on a Strip of ordinary Positive Film, the apparatus being a relatively simple one for use in store windows. Mechanism is provided for shutting off the electricity to the projection lamp while the film is being moved to change from one picture to the next.

1207105 E. R. Weishaupt 231

A Flash Light Igniter which utilizes a pyrophoric alloy.

1205893 T. Heinen 254

An Apparatus for Developing Photographic Plates by daylight. A light tight casing is provided above a developing tank with a station in the side where a plate holder may be placed containing an exposed plate. A horizontally actuated conveyor is located in the casing to receive the exposed plate from the plate holder. After receiving the plate, it is shifted centrally over the developing tank and the plate lowered into the bath.

1205708 E. W. Caldwell 254

A Photographic Developing Apparatus comprising a pivoted developing tank, the walls of which are of poor heat conducting material, the tank being oscillated by an electric motor to agitate the developer. To minimize oxidation of the developer and at the same time permit it to be cooled, the tank is provided with a dish-shaped cover which sets down into the developer and is filled with ice.

1207036 H. K. Hennigh 259

A Developing Box which may be also used as a changing box. A light tight box is provided with an observation opening in the top having the usual eye shade and ruby glass. In two sides of the box are openings through which the operator's arms may enter, the openings being provided with light tight sleeves.

1205079 W. N. Bartlett 2626

A Device for Actuating Camera Shutters from a distance, so that the operator can include himself in the picture. A large arrangement resembling a pair of tongs is applied to the end of a cable release and is fastened on any suitable wooden support. The tongs are actuated by a string which the operator pulls.

1204506 F. W. Smising 2626

A Shutter Actuator for Tripping the Shutter after an Interval, in order that the operator may include himself in the picture. It includes a spring-pressed piston, the motion of which is controlled by a needle valve which admits a small stream of air behind the moving parts. It is attached to the camera trip by a pair of jaws, which hold it in alinement with said trip.

1205486 F. L. Scott 2626

Another Device for Actuating the Camera Shutter so that the operator may include himself in the pictures. An extension is provided for the ordinary shutter actuating lever and from this extension is suspended a cord upon which a clock-work actuated reel is hung. The mechanism is set so that after a desired interval the reel suddenly unwinds and the clock-work thus drops, giving a sudden pull to the extension and shutter actuating lever.

1205393

W. A. Riddell, Assigned to E. K. Co. 264

A Folding View Finder provided with a Mask which may be rotated by hand through 90 degrees according to whether the picture being taken is a horizontal or a vertical one.

1206372

J. F. Polhemus, Assigned to Anasco Company 264

A Folding Finder for Hand Cameras. It is of the reflecting type and is adapted to be turned through 90 degrees when changing from horizontal to vertical pictures or vice versa. It is provided with a rotating mask having a rectangular opening, the mask being provided with teeth which mesh with teeth on the stationary lens mounting, so that when the finder is turned through 90 degrees, the mask is automatically turned to give the correct view.

1206357

G. W. Nushbaum 3109

An Arrangement for Preventing the Generation of Static Electricity in Motion Picture Apparatus. The idea is to make the film guiding surfaces, rollers, etc., out of the same material as the film, for example, out of Pyroxylin.

1204585

F. Norte 32 221

An Apparatus for Projecting Reading Matter line by line at appropriate times during the exhibition of motion pictures. It is particularly intended to project translations of reading matter accompanying foreign films.

1205427

J. W. Billings 320

An Attachment for Motion Picture Machines whereby items of descriptive matter are thrown on the screen in timed relation to the motion pictures. The items of description are printed radially upon a circular film disk, which is intermittently rotated by electromagnet means to bring the printed matter successively into projecting position. The main motion picture film is provided at appropriate intervals with metallic contact buttons, which at the correct time complete an electric circuit through two contact rolls, thereby actuating the disk carrying the descriptive matter. The latter disk may be provided with contact buttons which complete electric circuits to further auxiliary apparatus.

1205772

A. Mehlfelder, Assigned to Elizabeth Mehlfelder 3201

A Mechanism for Producing an Intermittent Feed Motion in Motion Picture Apparatus. It includes a continuously rotating shaft and an aligned counter shaft, the continuously rotating shaft carrying a cam which operates a series of shiftable slides which co-operate with holes in a member on the intermittently driven shaft.

1204272

F. A. Hardyman 3204

A Lamp House for a Motion Picture Projector. It consists of a tubular sheet metal body provided at the front with a frustro-conical extension and at the rear with a concave reflector at the focus of which an incandescent lamp is located.

1204425

A. F. Gall 3206

A Device for Holding the "Stereopticon" Lens which is usually furnished with a motion picture machine to project lantern slides. The holder is provided not only with adjusting means for moving the lens forward and backward when focusing, but also with means for swinging it laterally so as to center the picture upon the screen.

1207298

W. W. Kircher 3208

A Reeling Arrangement for Motion Picture Apparatus. It includes upper and lower reels arranged in parallel, vertical planes. The film is guided from the interior of the upper winding reel into the vertical plane of the lower reels and then through the projection apparatus. In returning, it is guided from the interior of the lower winding reel into the plane of the upper reel.

1205548

W. H. H. Knight 321

A Motion Picture Machine which, when used as a projector, does not need to employ a shutter. It includes a vertically reciprocating carriage carrying a set of film moving rolls and sprockets which are driven by complex mechanism, whereby the film is held stationary for a relatively long interval and then shifted the length of one picture with such extreme rapidity that the shift is invisible to the audience.

1204771

M. C. Hopkins 322

A Motion Picture Apparatus in which the pictures are projected upon a screen from a continuously and uniformly moving film without the use of a shutter, so that the screen is never in darkness. It includes a stationary lamp house, a stationary projecting lens and a pair of oppositely rotating polygonal refracting bodies of glass, which are rotated, one between the film and the lamp house and the other between the film and the lens.

1204091

K. von Madaler, Assigned to Projectophone Co., Inc. 323

An Apparatus for Preparing Combined Motion Picture and Phonograph Records, so as to produce absolute synchronism. Motion pictures and a phonographic record are taken simultaneously of a scene in the usual way. The motion picture positive is then run through the present apparatus and a phonographic record is made in the edge thereof from the original phonographic record. As the original phonographic record is turned it oscillates a needle which actuates a lever carrying a heated platinum wire which bears against the moving picture strip so that for every wave in the original phonographic record a corresponding wave will be burned or melted into the edge of the motion picture strip.

1204775

A. T. Jacobsson 324

A Motion Picture Screen composed of a fireproofed canvas base coated a pure white with French zinc. The surface is covered with a layer of minute glass globules, for example, Ballontino pearls, which are treated with hydrofluoric acid to remove their polish.

1206287

L. J. Auerbacher, Assigned to The Federal Screen Corporation of New York 324

A Process of Making Projection Screens. It consists in facing a fabric or wire cloth with a layer of pyroxylin on each face, the layer upon one of the faces being given a series of minute lenticular formations.

1206286

H. V. Ashby 325

A Toy Motion Picture Machine. The picture strip is mounted on the periphery of a drum which is intermittently rotated to successively pass the pictures under an observation window and beneath a magnifying glass.

A Motion Picture Projector for exhibiting films upon which the pictures are arranged in three or more parallel rows. The mechanism is such that after one row of pictures is exhibited the operator may shift the film to exhibit the next adjacent row and so on.

A Motion Picture Projecting Apparatus which is provided with its own illuminating means. The crank which drives the film feed is connected to also drive an electric generator which is provided with a speed governor. The film feeding mechanism may be disconnected from the driving mechanism to permit the film to be readily rewound.

A Printing Machine for Motion Pictures in which the intensity of the printing light is varied to correspond with the changes in density in the negative film, thereby obtaining uniformity in the positive. A disk is provided with a circular series of apertures of progressively increasing size, the disk being intermittently operated to bring different sized apertures in front of the printing light. The negative film is provided at the points where the density changes with sets of long perforations which operate an electro-magnetic apparatus which turns the disk to bring the proper aperture in front of the printing light.

A Printing Machine for Motion Pictures, so arranged that the printing light is varied in accordance with the printing density of the different portions of negative film. A disk is provided with a circular series of apertures which can be adjusted in advance. These apertures are moved successively in front of the printing light to vary its intensity. The step by step motion of the disk is caused by perforations made in the negative film each time a marked change in density is present. The apertures in the disk are prearranged to correspond to the changes in density and consequently to correspond to the apertures in the negative film.

A Machine for Cleaning Film by pulling it through a channel lined with felt, the channel being inclined to the direction of pull, so that the upper surface of the film is especially rubbed at one end of the channel and the under side of the film is especially rubbed at the opposite end.

A Machine for Cleaning and Polishing Film. The film passes through a series of mechanisms, one of which applies a fluid, such as alcohol to its surface, a second brushes it, a third polishes it, etc. The tension of the film is regulated by a pivoted idler roller.

Relate to Improvements in Rotary Photogravure Printing Machines.

## British Patents

B14225-1915

Pancromotion Inc., Assignees of K/24  
C. R. and W. van D. Kelley

Color Cinematography. Modification of the two-color successive additive process in which in order to cut down the exposure, each exposure is made first through a color taking filter and then with a subsequent exposure to white or yellow light, the rotating filter disk being provided with slots which can be either clear or filled with a yellow color filter so that each of the color separation negatives is partly exposed for its own color and partly to white light.

B20396-1913

J. Szczepanik and F. Habrow K/93

Bleach-Out Process. One claim is for a process of making coatings or emulsions for use in the bleach-out process, which consists in spreading granules dyed with dyes of the three colors (red, yellow and blue), which will not diffuse from their proper granules with or without a binding medium, which may also be sensitized and dyed with a non-diffusing dye.

B100224

O. Rohm 1411

Treatment of Raw Cotton. Alkali treatment before bleaching is replaced by digestion at 20°-40° C with a 0.1% solution of pancreatin or similar enzyme.

B101555-1916

H. Dreyfus 1513

Cellulose Acetates. In the production of cellulose acetates insoluble in chloroform but soluble in alcohol-chloroform, condensing agents other than sulphuric acid are employed, or mixtures of sulphuric acid with other condensing-agents, and the cellulose is subjected to a preliminary hydration or hydrolysis at a temperature lower than that at which acetylation is effected; the acetylation is stopped when the product shows the desired solubility.

B13608-1915

V. Wolny 2131

Folding Reflex Cameras. The invention relates to a type of folding reflex camera in which the focusing screen folds downwards. A light-tight seal between the mirror (when raised) and the focusing screen is formed by a folding frame, which, in accordance with the invention, is formed of bellows connecting the two frames which hold the mirror and focusing screen respectively.

B11312-1915

F. F. Church 2153

See U. S. Pat. 1202160. (This *Bulletin*, December, 1916, p. 20).

B101389-1916

J. Merrett 281

Mount Bevellers. This refers to apparatus in which the cutting is done by means of an inclined blade moving over the edge of a fixed blade on which the card is clamped. The apparatus in the invention is made so as to clamp the card at one end only by means of a guide block, and the movable blade is entirely detached from other parts of the apparatus, being guided at an acute angle to the cutting edge, thus obtaining a push cut similar to that of a carpenter's plane.

B12741-1915 L. J. E. Colardeau and J. Richard 218-083

Telephoto Stereoscopic Camera. The invention is a stereoscopic camera fitted with a pair of telephoto lenses and intended for use from aircraft.

B8201-1915 E. E. Press 3203

Cinematographs. Means for advancing and rotating the shutter around its axis while in motion.

B13185-1915 A. W. Kingston 364

Cinematograph View-Finder. The invention consists of a miniature camera, to be fixed to the side of the cinematograph camera, and provided with a lens in a helical mount. In focusing an object with this finder-camera the position of the lever operating the lens shows on a scale the distance of the camera, and the focus of the main camera can be set accordingly. Moreover, the focusing screen of the finder-camera is caused to slide across the axis of the lens as the lens is moved, and the finder-camera thus caused to show the same view as the main camera.

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## French Patents

477173 First addition L. Paris and G. Picard K/33

Process for the Reduction of Exposure in Color Photography. Grains of phosphorescent zinc sulphide are substituted for the starch grains as in the Autochrome plate. These are treated successively with alum and ammonia solutions, and the gelatinous alumina stained.

478436-1914 Usines du Rhône 1513

Preparation of New Cellulose Esters. (J. Soc. Chem. Ind. 1916, p. 1009).

478404-1910 H. de Chardonnet 1514

Process and Apparatus for denitrating, bleaching, dyeing and otherwise treating collodion threads. (J. Soc. Chem. Ind., 1916, p. 1009).

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## German Patents

DRP 292723 G. W. A. Sosna and J. E. Biederbach G5

Addition to DRP 288328. Photographic Materials with addition of a dye by which light sensitiveness is reduced. Phenolphthalein or similar substance is coated on the plate or film. This reacts with the alkali of the developer to give a colored solution which protects the emulsion from diffused daylight during development. J. Soc. Chem. Ind., 1916, p. 1083.

DRP 292352 A. Spitzer and L. Wilhelm J84

Process for the Simultaneous Toning and Fixing of Silver Photographic Images. Combined toning and fixing baths containing sodium or ammonium thiosulphate and salts (sodium) of tellurous or telluric acids. J. Soc. Chem. Ind., 1916, p. 1083.

DRP 293004 C. Schleussner K/33

Multicolored Screens for Color Photography consisting of colloidal particles stained with different colors and subsequently caused to coalesce by swelling in a suitable vapor.

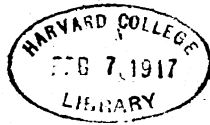


# Monthly ABSTRACT Bulletin



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*The Research Laboratory*

# Monthly Abstract Bulletin

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# Photography

## Warm Development

G11 ✓

B. J., 1916, pp. 669, 695

A note pointing out that it is usual for press photographers, who desire to get the maximum detail out of a negative, to employ a concentrated developer and warm the same to a point bordering on the melting point of the gelatine. A preliminary bath in formalin, or an addition of formalin to the developer is also recommended.

From experiments conducted in the Laboratory, the addition of formalin to most developers produces more or less fog, while if formalin be used as a preliminary bath, the plate should be well rinsed before development. The use of warm developers, even for developing high-speed plates, cannot be recommended, since at high temperatures the rate of production of chemical fog is greater than the rate of growth of the image in the shadows. For developing extreme under exposures on high speed plates, the use of a strong pyro developer without bromide, at a temperature not above 70° is recommended.

## Securing Registration in Double Printing

J

Phot. J. Amer., 1917, p. 34

A reprint from Photography. Describing a printing "dodge" which permits of the viewing of the whole of a p. o. p. image during printing. The device is not suitable for film negatives.

## On Developing Bromide Prints for Toning

Harold Baker

J3-137

B. J., 1916, p. 672

The author considers that the important factor which determines the color of sulfide toned prints is the time of exposure given to the print. A print developed with hydrochinon, or a metol developer restrained with bromide, gives a much warmer tone than a print made with a straight metol developer. The author is a strong advocate of the time method of development, developing from 2½ to 3½ minutes. A number of prints are developed at once, thus removing any error due to exhaustion of the developer. The author also recommends the use of two fixing baths.

## Toning Bromide and Gaslight Papers with Cobalt

J81

Camera, 1917, p. 59

## Drying Large Prints

L. Heath J9

B. J., 1916, p. 707

When washing and drying large prints, it is recommended that the prints be clipped together back to back, which prevents their curling and drying.

## The Urban-Joy Process of Color Cinematography

K/24

Motion Picture News, 1917, p. 295

Gives a clearly worded description of the improved Kinemacolor camera and projector which reduce to a minimum color fringes and color flicker.

The Visual Centre of a Rectangle, and its Influence on the Mounting of Prints C.W. Piper N1

B. J., 1916, p. 700

The author attempts an explanation as to why the visual centre of a rectangle rarely coincides with the geometrical center, the former being invariably above the latter. He considers, in view of the fact that the eye is accustomed to measuring distances downwards and not upwards, that the extra effort in measuring upwards tends to magnify such distances to the mind, and hence the reason for the placing of the visual centre above the geometric centre.

Collecting Silver Residues D. Charles P1

B. J., 1916, p. 691

A detailed description of the usual method of recovering silver from fixing baths, etc., by dumping the same into a solution of sodium sulfide.

Tone Reproduction and Its Limitations F. F. Renwick 01

Phot. Jour., 1916, p. 222

The article deals with the monochrome reproduction of tone, i. e., brightness, by the photographic process. The range of contrast existing in nature is stated to extend from 1 to 2 up to 1 to 60. The ability of negative and positive materials to reproduce contrast is discussed. Curves are given which show the relations that must exist between the characteristics of the negative and positive materials in order to obtain reproduction of tone. A photometer for the measurement of reflecting power is described. Considerable space is devoted to a discussion of the effect of visual accommodation upon the contrast of a photographic reproduction. The author makes several statements in regard to the retinal sensibility that are incorrect and hence his conclusions in regard to the resultant subjective contrast are subject to serious doubt. The paper, however, as a whole, is good and brings out some very interesting points in regard to tone reproduction.

Photo-chemical Effects of a Horseshoe Magnet F. F. Mace 01

B. J., 1916, p. 678

The author has observed that by placing a photographic plate over the poles of a magnet, placing thereon objects of iron, lead, zinc, sealing wax, etc., and enclosing the whole in an evacuated chamber, that after a period of 20 days, the plate on development was found to be fogged underneath the articles, thus giving a photographic reproduction of the same. As the editors point out, it would be interesting to know if the action was not due to emanations from the articles in question, by leaving the objects in contact with the plate, but not exposed to the action of the magnetic field.

Gradations in Negatives and Prints. 015

Camera, 1917, p. 13

An article from the Eastman Kodak Publication department.

Cinematograph for Ordinary Portraiture A. Lockett 034

B. J., 1916, p. 660

The author advocates the use of a motion picture camera in every photographer's studio, in view of the fact that only short lengths of film need be exposed, while the photographer can easily handle the developing himself, cutting out the few pictures which he desires to enlarge. The limitations of the process lie in the fact that only small enlargements up to  $5 \times 7$  can be made; and in any case, the loss in definition involved is a serious drawback to a general adoption of this method.

- Why They Failed** E. B. Stephenson 041  
**The Camera, 1916, p. 651**  
 A statistical study of the causes of failures in amateur negatives.
- Decennia Practica** 045  
 B. J., 1916, p. 661  
 A third article pertaining to the production of lantern slides.
- Motion Picture Literature** 06  
 Mov. Pict. News, Dec. 23, 1916, p. 4062  
 A very complete list of books and monographs appertaining to motion picture photography and projection.
- Photographic Surveying in Canada** M. P. Bridgland 084  
 Amer. Phot., 1917, p. 23  
 Gives some interesting information on the method and apparatus used in photographic survey.
- The Choice of a Plate** 11  
 B. J., 1916, p. 658  
 Hints to the professional photographer on choosing a plate for any particular purpose. Having found a suitable plate, the photographer is urged to stick to the same and modify his methods of working if anything goes wrong, rather than lay the blame on the plate and forsake the same for some other brand.
- Proportional Reducers** K. Huse and A. H. Nietz 1656 ✓  
 Abel's Phot. Week., 1916, p. 580  
 Communication No. 39 from the Research Laboratory of the Eastman Kodak Co.
- A Non-Bromide Bleach for Sulfide Toning** H. Baker 1661  
 B. J., 1916, p. 659  
 In view of the high price of potassium bromide, a potassium bichromate-sodium chloride bleaching bath for the sulfide toning of prints is recommended. In order to prevent yellow stained highlights, the author recommends the use of a second fixing bath, thus eliminating the possibility of a retention of any silver salt by the print. The chief objection to the bichromate bath is the prolonged washing necessary in order to eliminate the bichromate before sulfiding. The elimination may be hastened by bathing in a solution of sodium chloride. The author also recommends the use of alum in the sulfide bath in order to prevent blisters.
- Decennia Practica** 21  
 B. J., 1916, p. 673  
 Cameras and Accessories.
- An Electrical, Portable Igniter for Magnesium Flash Powder** C. L. Woolley 231  
 B. J., 1916, p. 680  
 An abstract of a similar article in "American Photography." The author employs the fuse wire ignition method, and lays stress on the nature of the fuse wire

employed. It has been found in the laboratory that iron wire of gauge suited to the current employed is the best material to be employed for this purpose.

Lens Shades and their Value W. S. Davis 26  
Camera, 1917, p. 1

Gives some types of detachable lens shades.

How to Make a Holder for a Wratten Filter L. Wendell 2668  
Photo Era, 1917, p. 24

Decennia Practica 27  
B. J., 1916, p. 687

A series of articles describing suitable studio equipments.

Focusing Mounts for Cinematograph Cameras 3106  
Mov. Pict. News, Jan. 20, 1917, p. 457

A description of the various lens focusing mounts for cinematograph cameras.

Decennia Practica /61  
B. J., 1916, p. 703

Daguerreotypes and other direct positives.

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## Photo-Engraving

The Central-Western Conference of Manufacturing Photo-Engravers  
Photo Eng. Bull., Dec., 1916

With the exception of a reprint of the Research Laboratory article on the "Ratiometer for Color Work" in which the illustrations are misplaced, this issue is devoted to an account of the above conference.

Plate Printing R. F. Salade J0714  
Amer. Printer, Dec. 20, 1916, p. 33

Deals with steel and copper plates (intaglio) printing.

Photolithographic Machine H. C. Boedicker 21 0722  
Amer. Printer, Dec. 20, 1916, p. 70

Further notes, (with photograph) on this camera.

A Wormy Line Half-Tone Screen S. H. Horgan 0734  
Inland Printer, Jan., 1917, p. 509

Varnish or reticulated gelatine may be employed; it is especially recommended that a transfer be taken from Ben Day's shading medium and this photographed.

# Physics

## The Adaptability of the Eye to the Illumination

Photo Era, 1917, p. 9

Paper from the Eastman Kodak Company Publication department.

## Optical Glass: A Brief Historical Review

Photo Era, 1917, p. 20

## Photo-Electric Photometry

J. Kunz

J. Frank. Inst., 1916, p. 693

Several types of photo-electric cells gave a rectilinear relation between light intensity and photo-electric current.

## The Emissive Power of Tungsten for Short Wave-Lengths

E. O. Hulbert

J. Frank. Inst., 1916, p. 695

The emissivity of tungsten increases with decrease of wave-length, and with decrease of temperature.

## The Condensation Pump: An Improved Form of High Vacuum Pump

I. Langmuir

J. Frank. Inst., 1916, p. 719

Two new types of mercury sweep condensation pumps are described. The factors governing the speed and degree of exhaustion are discussed and the theory of operation given.

## Variation of the Wave-Length Sensibility of Photo-Electric Cells with Time

H. E. Ives

J. Frank. Inst., 1916, p. 811

A photo-electric cell showed a decrease of blue sensitiveness relative to red of about forty per cent. in eight months.

## Hue Difference and Flicker Photometer Speed

H. E. Ives

J. Frank. Inst., 1916, p. 812

The author concludes that the minimum critical speed in comparing the spectrum against any colored light occurs at the wave-length which is distant from the spectrum the least number of hue steps.

## A Direct Reading Precision Refractometer with Uniformly Divided Scale

G. W. Moffitt

Phys. Rev., 1916, p. 663

The method consists in placing a drop of the liquid to be tested on a convex surface, bringing the nose of the microscope down upon it and focusing the eyepiece.

**On a Modification of the Hilger Sector Photometer Method for Measuring Ultra-Violet Absorption**

H. E. Howe

Phys. Rev., 1916, p. 674

It is shown that under the proper conditions the use of the rotating sector gives correct results in photographic photometry. The aluminum spark under water gave a satisfactory continuous spectrum.

**An Ionization Manometer**

O. E. Buckley

Pro. Nat. Acad. Sci., 1916, p. 683

Extremely low gas pressures are measured by the quantity of positive ionization produced by an electron discharge.

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## **General and Inorganic Chemistry**

**Glasses of France, Bohemia and Germany**

P. Nicolardot

Comp. Rend., 1916, p. 352

The results of comparative trials of resistance to reagents, to water, and to temperature-changes are given; also analyses.

**Standard Cells and the Nernst Heat Theorem**

Beibert, Hulett and Taylor

J. Amer. Chem. Soc., 1917, p. 68

Quantitative data are given which in connection with Nernst's so-called "Third Law of Thermodynamics" enables the voltage of the standard cell to be calculated from heats of reaction and specific heats.

**Flotation Process**

The Supreme Court confirms the patent of the Minerals Separation Ltd. versus James H. Hyde in regard to 7 of the claims and decides against 3.

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## **Colloid Chemistry**

**The Manufacture of Linoleum and its Valuation**

A. de Waele

J. Ind. Eng. Chem., 1917, p. 6

The operations in the manufacture of linoleum are primarily concerned with the series of colloid chemical reactions involved in the "blowing" of boiled linseed oil to the "cement", a complex process in which both oxidation and polymerization take place, the next result being a steady increase in the viscosity of the oil and the formation of a semi-solid gel. Details are given of the actual methods in vogue, also of the analytical and organic chemical reactions useful in valuation.

**Emulsions and Suspensions with Molten Metals**

H. W. Gillett

J. Ind. Eng. Chem., 1917, p. 31

The colloid chemical factors involved in the refining of metals are emphasized, and attention directed to a large number of metallic suspensions and emulsions occurring in metallurgical operations.

## Similarity of Vitreous and Aqueous Solution

A. Silverman

J. Ind. Eng. Chem., 1917, p. 33

Based largely on the colloid solutions of metals and metal oxides in glasses.

## Varnish Analysis and

M. Y. Seaton, E. Probeck and G. B. Sawyer

### Varnish Control. II.—Viscosity of Varnishes

J. Ind. Eng. Chem., 1917, p. 35

It is suggested that the viscosity-temperature curves allow a differentiation between "true solution" varnishes and "colloid solution" varnishes, the curves for the former being convex to the x-axis, of the latter, straight lines inclined toward it.

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# Organic Chemistry

## Nitro Derivatives of Resins as Clarifying Agents

C. Bauer

J. Soc. Chem. Ind., 1916, p. 1123

German Patent, 292,542. These substances can be used for clearing turbid aqueous liquids, such as solutions of gelatine or dextrin. The nitrated compound in alcoholic solution is added to the liquid to be clarified and the mixture filtered.

## Coumarone Resin

F. H. Meyer 1613

J. Soc. Chem. Ind., 1916, p. 1164

Patented method (DRP 294107) of obtaining coumarone resin from solvent naphtha. (See this *Bulletin*, Sept., 1916, U. S. Patent 1191801).

## Nature and Origin of Petroleum and Asphalt

C. Richardson

Met. Chem. Eng., 1917, p. 25

Study of the asphalt from the well-known pitch lake, Trinidad. It appears that a petroleum, existing at a considerable depth, is converted to a more solid form of bitumen (asphalt) by contact and emulsification with clay and sand in colloid condition. The process is supposed to obtain also in regard to natural gas in that this, by surface condensation on sand, is converted into petroleum oils. Details of composition of asphalt, and of various natural gases are given.

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# Analytical Chemistry

## Balance for the Rapid Determination of the Densities of Liquid and Solid Bodies

C. Chéneveau

J. Phys., 1916, p. 103

Describes a densimetric balance, similar to the Westphal, but with a variable weighted counterpoise arm moving along a graduated scale. The principal objects served are: (1) Determination of density (specific gravity) by direct reading. (2) A very extended scale of densities with the same precision in all parts of the scale. Readings are to four significant figures.

## Chemical Analysis of Rubber Goods

Caoutchouc, 1916, p. 9066

### Potassium Dichromate as a Standard. II.

G. Bruhns

J. Chem. Soc. Absts., 1916, (ii) p. 581

Wagner's supposition that potassium dichromate owes its high titration value to catalytic promotion of oxidation by dissolved oxygen does not bear the test of experiment. The author republishes in the paper his experiments on the time required for the complete separation of the iodine liberated from potassium iodide by very dilute (about 0.002-0.005 N) potassium dichromate solutions in the presence of sulphuric and hydrochloric acid respectively.

### A Colorimetric Method for the Determination of the Carbon Dioxide Percentage in Air

Higgins and Marriott

J. Amer. Chem. Soc., 1917, p. 68

The method depends upon the fact that the acidity (or hydrogen ion concentration) of a standard solution of sodium bicarbonate which has been saturated with air containing carbon dioxide, depends upon the partial pressure (a proportion by volume) of carbon dioxide in the air. The acidities are determined colorimetrically by comparison with solutions of the dye phenolsulfonephthalein in phosphate solutions of known acidity which are standardized in turn by comparison with bicarbonate solutions in equilibrium with a known partial pressure of carbon dioxide. The experimental details of the method are simple, and satisfactory results are easily obtained.

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## Patent Abstracts

### U. S. Patents

1208490

Daniel F. Comstock

K32

Assigned to Technicolor Motion Picture Corporation

A Device for registering the different Colored Images in Multicolor Motion Picture Projection. It includes plane parallel disks of glass, which are angularly adjustable in the image-forming rays.

1209420

W. B. Featherstone

K/24

A Process for making Colored Motion Pictures. Alternate images in the film are each the result of two exposures through two filters of the same color, but at different time intervals. The object is to minimize color fringes.

1209453

I. Kitsee

K/35

A Process for making a set of Printing Rollers by means of which three-color screens may be printed upon Motion Picture Film. The rollers are made photographically by projecting, through different filters, the images of a master color screen, followed by the usual development and etching.

1208739 P. D. Brewster K/41

A Process of Color Photography which uses a film that is sensitized on both sides. Independent images of the subject in approximately complementary colors are projected in registry upon the opposite sides of the film. The latent images thus produced are developed and colored to produce a positive for projection or a negative for reproduction purposes. The images may be of slightly different size on the opposite sides of the film when they are projected by converging rays.

1208343 E. M. Long. M263

Assigned to the Standard Optical Co. of Geneva, N. Y.

A Lens Centering and Transfer Device to facilitate placing the lenses in the rotary holders of edge grinding machines. The gripping jaws are arranged so that the whole instrument may be manipulated by one hand.

1208000 E. J. Pope M1412

An attachment to a Fourdrinier Machine for producing a web of paper having a portion of less thickness than the major part of the sheet. Water under a small pressure is flowed upon the strip to be thinned, the thinned portion then passing under longitudinal line-forming devices which prevent a flowing back of the pulpy substance to the thinned portion.

1208244 H. F. Waite X2542

A Tank for Developing Dental X-Ray Film. It includes a light-tight passage at the top through which the several treating solutions may be poured in or out. An adjustable air vent is provided in the bottom to permit the entrance of air when the solutions are being poured out of the top.

1208664 H. Russak and O. von Hanstein, 067

Assigned by von Hanstein to Russak

A Method of temporarily making the Scratches on Motion Picture Films Invisible by passing the film, just prior to projection, between a pair of pads which are saturated with carbon tetrachloride.

1208982 J. J. King 07 2651

A Wet Collodion Plate-holder Bar, which is provided with a plurality of pockets to catch and retain any dripping of silver nitrate solution.

1200774 F. Steimmig 1515

Treatment of Viscose.

1210164 J. P. Hansen 2106

A Magazine Camera designed to permit focusing up to a short time prior to exposure. Unexposed plates are located in special holders in the top of the camera while a magazine for the exposed plates is located in the bottom. A forward and backward moving ground glass frame is provided at the rear together with a focusing hood which fully closes when an exposure is being made. When the operating knob is turned, after focusing, the ground glass is automatically moved rearwardly,

the focusing hood is closed, the lens shutter is closed and an unexposed plate is swung downwardly into the focal plane and the exposure takes place; whereupon the exposed plate and its holder are dropped downwardly and forwardly into the lower magazine.

1208066

H. I. Williams 215

A Roll Film Camera having a winding mechanism for rapidly bringing a fresh section of film into the exposure place without the necessity of inspecting the numbers on the back of the film. It includes a cord passing over a winding pulley, the cord being pulled downwardly each time a section of film is changed. The length of the movement of the cord is progressively diminished to allow for the increasing diameter of the film on the winding roll.

1208320

H. L. Ide, Assigned  $\frac{1}{2}$  to Roy W. Ide 215-2683

A Roll Film Camera provided with an observation window having a tinted segment. The paper backing of the film is provided with a strip of actinometer paper which passes under said window. It appears to be a minor variation of the scheme disclosed in the same inventor's earlier patent, No. 1170538.

1209015

D. Palmer 2152

An Attachment for Backs of Roll Film Cameras such as our Brownie cameras. It consists of a lever carrying a lug which is interposed in the path of the main shutter operating lever whereby accidental exposure is prevented.

1209239

F. J. Wende 218

A Process Camera with a Screen Holder holding more than one cross line screen, and means to bring into operation one screen after the other on the same plate while the operation is being made.

1208071

A. H. Wynkoop, Assigned to Photo-Reproducer Co. 2171

A Commercial Copying Camera the body of which is sufficiently large to enable an operator to enter therein. On the front of the camera a horizontal vertically-adjustable shelf is provided. The printed matter to be copied is placed on this table and an image thereof is projected into the body of the camera onto a vertical easel by means of a vertical lens and a prism.

1208558

L. J. R. Holst, 2171

Assigned to Williams, Brown & Earle, Inc.

A Camera for the commercial copying of documents, etc. on negative paper. This attempts to substitute the film pack principle in place of the roll film principle in cameras of this type. The sheets of paper in the pack are provided with long tabs which draw the sheets in succession to the exposure opening and then through developing and fixing baths.

1209419

H. D. Farquhar 2176

An Easel for holding flat the printed matter or picture to be copied in a Copying or Commercial camera. It includes a pivotal frame which is readily turned from vertical to horizontal for loading and unloading, and it is provided with a rubber diaphragm which pneumatically presses the sheet to be copied against the glass of the easel.

1208218 P. J. Scheller, Assigned to The Slide-O-Graph Co. 22

A Motor Operated Projection Apparatus for displaying a series of cards or slides in succession. An endless belt carries the slides.

1209631 A. Sletten 241

A Photographic Printing Machine particularly adapted to feed sensitive paper from a roll over the exposure area and sever the strip after the picture has been printed. It includes a circular light box around the periphery of which is arranged a drum of glass provided with a set of different sized masks. The paper feed is adjustable to correspond with the size of mask and negative which are employed.

1208586 G. Leachman 259

A Portable Dark Cabinet provided with light-trapped armholes and observation tubes provided with ruby glass and shutters.

1208344 E. S. McAll 2614

A Small Folding Camera Support adjustable to sustain the camera on irregular and inclined surfaces.

1208617 J. R. Montague 2626

An Apparatus adapted to be attached to the back of a camera to actuate the shutter so that the operator may include himself in the picture. It includes a spring actuated lever which is released when the operator pulls a string.

1208711 J. E. Payne 2626

A clock-work mechanism for actuating the shutters of box cameras so that the operator may include himself in the picture.

1209745 W. H. Morris 2626

A Shutter Actuating Mechanism driven by clockwork to make an exposure after a predetermined time thereby permitting the operator to include himself in the picture.

1210134 J. Becker 2645

A Direct Vision Finder composed of a pair of eccentric diverging lenses whose axes are parallel to the axis of the camera. One of the finder lenses may be removed to narrow the finder image so that it will agree with the camera image when a long focus objective is used thereon. Means is provided for directing the line of sight of the observer to the central point of the finder image.

1210135 J. Becker 2645

A Direct Vision Finder for Cameras. It is so mounted that the negative lens of the finder may be removed at will to permit of seeing the central part of the finder field on an enlarged scale.

1210136 J. Becker 2645

A Direct Vision Finder for Cameras. It consists of a pair of eccentric forwardly tilting negative lenses, the rear one of which is pivotally mounted so that it may be turned downwardly out of the line of vision. The photographic objective is a convertible

one, the front element thereof being also pivotally mounted so that it may be moved out of the way. The pivoted element of the finder may be connected by a link with the pivoted member of the objective so that a single movement of the link will move them both out of the way and the view in the finder will correspond to the view in the camera.

1210137

J. Becker 2645

A Direct Vision Finder for Cameras. It includes an eccentric lens set with its principal axis inclined to the axis of the camera lens so that the observer may look downwardly and forwardly at the finder instead of viewing it horizontally from the rear. The tilting of the axis is to minimize distortion. Two of such lenses may be combined where the camera objective is convertible so that half of the finder will be used when a corresponding half of the camera objective is employed.

1207448

W. W. Venable 268

A Photographic Exposure Calculator. It includes a series of concentric disks bearing data concerning the different factors from which exposure times are determined. By appropriately turning the disks, the calculated exposure for any given stop appears under an observation window.

1208321

H. L. Ide 2683

An Actinometer Arrangement Applied to Film Packs. The tabs of the pack are provided with strips of sensitized actinometer paper and also with exposure calculating tables.

1208573

A. Blondel 2915

A Portable Photometer. The illuminant is an electric incandescent lamp having a single straight filament. The intensity of illumination is controlled by an adjustable slit, the width of which is changed by a micrometer screw.

1208279

I. Kitsee 32

An Apparatus for Projecting Motion Picture Films in which the pictures are arranged in a spiral series upon a circular disk. This disk is placed upon a rotary support provided with a series of spiral teeth, which are engaged by a driving pinion having flanges which abut against the sides of said teeth. When the pinion is rotated it not only turns the support, but moves it laterally.

1209493

N. Power, Assigned to Nicholas Power Co. of N. Y. 320

A Speed Indicator adapted to be connected with the driving mechanism of a motion picture machine and arranged to indicate definitely the time which it will take to complete the exhibition of the roll of film in the machine. Its scale is illuminated by light reflected from the back of the shutter blades.

1208462

S. G. Boernstein 320

An Attachment for Motion Picture Advertising Apparatus of the type used in show windows or show cases. It includes a conical telescoping light shield or bellows attached to a frame which is fastened upon the glass of the store window by suction cups.

1208685

L. Stanek 3201

A Gearing for intermittently actuating the sprocket wheels of motion picture film feeding mechanism.

1208740

A. D. Brixey 3201

A Framing Device for Motion Picture Machines. A beveled gear arrangement is interposed between the sprocket shaft of a motion picture machine and the driving shaft. This enables the angular relation between the shafts to be adjusted while the machine is running at full speed. Such angular adjustment enables a relative movement between the pictures on the film and the window of the machine whereby correct framing is obtained.

1209492 N. Power, Assigned to Nicholas Power Co. of N. Y. 3201

A Motor Driving Mechanism for Motion Picture Machines. It includes a variable-speed friction gear, one of the disks of which moves radially over the other.

1209584 J. J. Hughes 3203

A Rotary Shutter for Motion Picture Projection Apparatus so arranged that it may be adjusted angularly with respect to the shaft on which it is mounted while the machine is running at full speed. The shutter blades are mounted on a collar which is turned by a pin that engages in a helical slot of high pitch in the driving shaft. By moving the collar forwardly or rearwardly through a suitable yoke, the pin travels in the slot and the angular relation to the shutter and shaft is changed.

1210063 F. C. Hamilton, 3203

Assigned to Eureka Projector Co. Inc., of New York

A Rotary Shutter for Motion Picture Projection Apparatus composed of a hub having dovetailed slots and a series of vanes composed of light diffusing material which have dovetailed ends detachably fitting in the slots of the hub.

1210064 F. C. Hamilton, 3203

Assigned to Eureka Projector Device Co. Inc., of New York

A Rotary Shutter for Motion Picture Projection Apparatus. It comprises a hub having dovetailed slots in which the shutter vanes are detachably mounted, the shutter vanes being composed of translucent material which diffuses rather than obstructs the light rays. Where one of the vanes is larger and heavier than the others the extra weight is counterbalanced by fastening a series of weights upon the opposite side of the hub.

1208646 N. Power, Assigned to Nicholas Power Co. of N. Y. 3204

An Indicator which will show the operator of a motion picture machine how much film is left in the magazine. A pivoted arm bears against the film on the roll and as the film is unwound said arm moves toward the center of the roll. The movement of the arm actuates a pointer moving over a calibrated scale.

1210212 J.G.G. Ross, Assigned to Nicholas Power Co. of N. Y. 3204

A Film Guiding Device adapted to be used as a "valve" for the magazine of a motion picture machine. Glass plates are substituted for brass members wherever the edges of the film rub against the guide, thereby reducing wear both on the film and on the guide.

1207211 N. Power, Assigned to Nicholas Power Co. of N. Y. 3208

A Device for maintaining a uniform tension on motion picture film while it is being wound up. A bend in the film passes over a roller which is connected to a frictional disk which drives the winding reel. Whenever the tension on the film becomes too great, the friction disk is moved out of driving contact with the reel.

1208647      N. Power, Assigned to Nicholas Power Co. of N.Y.      3209

A Signaling Device for Motion Picture Reels which will indicate to the operator whether or not the reel is being turned too rapidly. When the speed of the reel is too great, two spring-pressed arms fly outwardly, due to centrifugal force, and engage a series of teeth on a circular member, making a rattling noise.

1210203      N. Power, Assigned to Nicholas Power Co. of N.Y.      3209

A Safety Device for Motion Picture Machines. Whenever the film becomes stuck in the projection aperture, the film above the aperture forms a progressively elongated loop which presses upwardly in a tube and eventually moves a lever which causes a pawl to drop into a ratchet wheel and stop the machine.

1210323      L. Janssens      323

An arrangement for maintaining synchronism between a perforated music sheet and a motion picture film. The arrangement is such that the motors of the musical instrument and motion picture apparatus are automatically speeded up or retarded whenever the instruments get out of phase.

1209498      J. Richard and L. J. Colardeau      326

Apparatus for obtaining stereoscopic motion picture effects by direct vision. The stereoscopic pairs of pictures are printed upon a horizontal movable film, those of the right eye are above the medial line of the film, and those of the left eye below said line. The pictures of each pair are also separated horizontally by a distance equal to the normal space between the eyes of an observer. When such a film is intermittently moved through the observation apparatus at sufficient speed, stereoscopic motion picture effects are obtained.

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## British Patents

B14722-1915      H. Workman      K/21

Color Cinematography. The invention consists of optical appliances for securing even illumination of, say, three separate "gates" by a single-light source, such as an arc in colour-cinematographic projection. Such appliance may be a cylindrically curved lens near the condenser, in conjunction with a similar lens at each "gate."

B16708-1915      F. F. Renwick, B. V. Storr—Messrs. Ilford, Ltd.      P1

Recovering Silver from Emulsions. Claim for a method of recovering silver from diluted emulsions, hitherto thrown away as waste, in the manufacture of photographic emulsions. The method consists of forming a flocculent precipitate in the emulsion by adding to the latter a reagent or reagents capable of coagulating the gelatinous matter, the silver being carried down with the precipitate and recovered by subsequent treatment similar to that for the recovery of silver from concentrated emulsions. The emulsion should be first aged by allowing to stand for two or three days, and then the precipitant, such as ferric chloride or salts of aluminum or copper added. Excess of the salt should be avoided, and it is an advantage if the gelatine is slightly alkaline. Tannic, picric or chromic acids are also suitable precipitants, but much larger quantities of these are required than of the inorganic salts above mentioned.

**B102668-1916**      **F. F. Renwick, B. V. Storr—Messrs. Ilford, Ltd.**      **P1**

**Recovering Silver from Emulsions.** An improvement on the method for recovering silver from dilute emulsions, given in Patent No. 16708-1915. The improved method consists in precipitating within the gelatine such precipitates as hydrated alumina, ferric hydrate, resin, casein, etc., produced by any of the many chemical reactions; e. g., a solution of alum may be added to the emulsion, followed by the addition of ammonia, or a solution of resin soap, or of casein in ammonia may be added, followed by hydrochloric acid. The precipitate of alumina, resin, or casein thus produced carries down the colloidal silver halide, from which the silver may be recovered in the usual manner.

**B17196-1915**      **L. J. E. Collardeau**      **X442**

**X-Ray Stereoscopes.** The invention consists of a stereoscope for viewing at will laterally inverted or non-inverted stereoscopic pictures. Two relatively adjustable optical systems are employed, the one for viewing a picture in the usual manner and the other for inverting the images of the same picture without altering the position of the latter, i.e., left-hand portions are brought to the right, and vice versa; rear planes are brought to the front and vice versa, thus giving the illusion, in X-ray stereographs, that the picture had been taken after turning the patient over. For the optical system a set of magnifying lenses is used; for the other a tetrahedron and total-reflection prism in conjunction.

**B18055-1915**      **T. R. Johnston**      **0713**

**Improvements in Rotary Photogravure Printing Machines.** Suggests the use of flat sheets for etching, fastened round the cylinder with a rubber blanket underneath and wiped by means of smooth metal roller revolving in the opposite way to the cylinder.

**B16171-1915**      **P. G. Glaser**      **0721**

**Producing Grain upon a Transparent Material, for Lithographic Purposes, for Transference to Stone etc.** A resin grain, etched upon plate glass, forms the casting base for a celluloid film. This is precisely similar to the way Norwich films are produced by Dodge in this country. The process described for using this film has also been previously patented by Dodge.

**B14511-1915**      **E. L. Hudson**      **1241**

**Opaque Paper Negatives.** The claim is for a "roll-film" of emulsion coated on a white paper base, the negatives so made being "printed" by photographing them in a copying camera or with an adaptation of the camera with which they are made.

**B102066-1916**      **E. A. Pin.**      **127**

**Stripping Film.** Claim for the use of a substratum of soap between the emulsion and a temporary support for the purpose of stripping off the finished negative film. A formula for the substratum consisting of gelatine, chrome alum, soap and glycerine is given.

**B14201-1915**      **H. Dreyfus**      **1513**

**Manufacture of cellulose acetates.**

**B16698-1915**      **W. R. Rooth**      **3206**

**Duplex Cinematograph Projector.** The invention consists in a projector in which rays from the light-source in the cinematograph lantern proper are utilized for a second projection system placed to the sides and intended for the projection of ordi-

nary lantern slides. The side rays from the light-source are reflected into this second projection system by a mirror placed at  $45^\circ$  to its optical axis, a secondary condenser being mounted in the partition separating the two lantern bodies.

B101814

H. W. Joy 321-K067

**Cinematograph Mechanism.** The claim is for a projector suitable for both color and black and white projection and provided with two separate intermittent film-feeding mechanisms, one for color and one for monochrome.

B14010-1915

F. Folwell 322

**Continuous-Movement Cinematograph.** The film is continuously moved by any suitable mechanism; the lens (without shutter) remaining continuously open. Exposures are made by a species of focal plane shutter consisting of an endless opaque band with vertical slits 1 in. apart and  $1/64$ th in. in width, the band moving continuously in a horizontal plane—that is, in a direction at right angles to that of the film. The speed of the shutter-band is such that a slit traverses the width of the film in the same time that the film has descended the depth of the "gate". By this exposure, horizontal lines are distorted in the negative to an acute angle. The negative film is developed and printed as usual, save that the "gate" of the printing machine is of rhomboidal shape and the positive is then projected by an arrangement similar to that of the camera, by which the distortion is rectified so long as the ratio of shutter speed to negative-film speed in the camera is the same as that in the projector.

## French Patents

Fr-12266-1914

A. A. Clete, I. Tchernickofsky MJ6-MJ7

**A Machine for Washing and Drying Photographic Prints in a continuous web** coming from the original printing apparatus. Hot air from the illuminant of the printing apparatus is utilized for the drying of the prints.

Fr-478951-1914

H. Dreyfus 1511

**Process for the Manufacture of Anhydrides of Aliphatic Acids.** Sodium acetate, on distillation with sodium pyrosulphate, yields acetic anhydride. J. Soc. Chem. Ind., 1916, p. 1179.

Fr-478023-1914

H. Dreyfus 1513

**Process for manufacture of chloroform-insoluble cellulose acetates and derivatives.** Temperature data for acetylation. J. Soc. Chem. Ind., 1916, p. 1152.

Fr-479387-1915

L. Clément and C. Rivière 1693, 1513

**Varnishes with a Basis of Cellulose Esters.** The chief claim is for the addition of ethyl acetoacetate to cellulose acetate varnishes. J. Soc. Chem. Ind., 1916, p. 1164.

## German Patents

DRP293398

E. Wedekind 1592

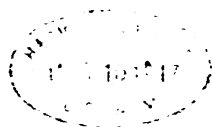
**Smokeless and Odorless Flashlight Powders.** Mixture of finely divided rare-earth metals (zirconium, thorium, titanium) with their nitrates or perchlorates. J. Soc. Chem. Ind., 1916, p. 1180.

Monthly  
**ABSTRACT**  
Bulletin



March, 1917

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*The University*

# Monthly Abstract Bulletin

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Vol. 3

No. 1

## **Note**

**In order to make the volumes of the Bulletin run with the calendar year, this number is the first number of the third volume, which will cover from March to December 1917, having ten numbers, and January 1918 will thus be Vol. 4, No. 1. The pagination has also been altered and in future each volume will be paged consecutively instead of each new Bulletin commencing with page 1.**

# Photography

The Manufacture of Cine Film Stock A1212  
Mot. Pict. News, 1917, pp. 782, 946

Direct Positives on Bromide Paper G8  
Phot. J. Amer., 1917, p. 55  
An article from the Eastman Kodak Publicity Department.

Decennia Practica K263-K266  
B. J. Color Supplement, 1917, p. 2

A new series of Decennia Practica is to appear during 1917 in the Color Supplement dealing with notes on color photography. The first installment deals with filters for three-color work and with the testing of lenses for color photography.

The Paget Color Plate Dr. Rodman and others K/32  
Phot. J., 1916, p. 256

A discussion of the practical use of the plate, of interest from the number of hints contained in it.

A Shutter Testing Machine A. B. Hitchins and F. B. Gilbert M262  
Jour. Frank. Inst., 1917, p. 73

An ingenious, precise, but somewhat complicated, machine for measuring the speed and efficiency of shutters. Photographs and data on sample tests are given.

Gradations in Negatives and Prints 015  
Camera, 1917, p. 13

An article from the Eastman Kodak Publicity Department.

The So-Called Mackie Line 017  
B. J., 1917, p. 15

There is a considerable amount of correspondence in the B. J., on the appearance of a white line (in the print) surrounding dark objects which, according to one writer, has been called the Mackie line. The line is probably due to the local exhaustion of the developer, which produces a local concentration of strongly restrained and exhausted developer.

Photography of Quinine 0562  
B. J., 1917, p. 3

If white paper be painted with quinine sulphate, there is some difficulty in photographing it by ordinary light. With an artificial light rich in ultra violet such as a mercury vapor lamp or an enclosed arc, the quinine becomes visible owing to its fluorescence and at the same time absorbs ultra violet so that it photographs somewhat darker than white paper. Chinese white is a more convenient medium than quinine for use for secret writing, and photographs dark by ultra violet light.

**The Nature and Speed of  
Flash Powders**

J. I. Crabtree 0581-1592

B. J., 1917, p. 29

Communication No. 43 from the Research Laboratory of the Eastman Kodak Company.

**An Improved Formula for Reducing Negatives**

0634-1656

Mot. Pict. News, 1917, p. 619

The proportional reducer recently worked out in the Laboratory is recommended for reducing cine negative film.

**Blue Tones on Motion Picture Film**

0645

Mot. Pict. News, 1917, p. 948

An article prepared by the Research Laboratory.

**How to Convert Waste Film into Leader Film**

0649

Mot. Pict. News, 1917, p. 947

An article prepared by the Research Laboratory.

**The Influence of Photography in the War**

J. H. Gear 083

Phot. J., 1916, p. 269

Address of the President of the Royal Photographic Society. Deals with X-ray work in the War and with the work of the Royal Flying Corps. Owing to the censorship little information on technical points is given.

**Anastigmat Lenses**

083-263

B. J., 1917, p. 39

The British government under the Defence of the Realm Act has ordered all British photographers to make returns of the lenses in their possession, classifying into groups of focal length and special apertures: from 8 to 12 inches and aperture not less than  $f/4.5$ , 18 to 24 inches and apertures not less than  $f/6$ , 22 to 28 inches and aperture not less than  $f/11$ , 30 to 72 inches and aperture not less than  $f/8$ .

**Pinhole Photography and Some Special Applications**

098

B. J., 1917, p. 27

An interesting suggestion is to use a pinhole for extremely small cameras with a focus of an inch or so. Owing to the infinite depth of field given by a pinhole, it is possible to find out how the world must look from the point of view of very small animals. Mr. Carnegie used a similar method for studying the visual field of a fish under water.

**Producing Photographs in Black  
Sulphide of Silver**

"Chemist" /63

Phot. J. Amer., 1917, p. 61

A collodion transfer process in which the silver image is bleached in copper sulphate and potassium bromide and sulphided with ammonium sulphide.

- Monomet in the Development of Plates and Prints H. Baker 15314

B. J., 1917, p. 4

Mr. Baker, who is a well known professional photographer of Birmingham, has used Monomet with hydroquinone in the place of metol and finds it superior to metol both for plates and paper.

- British Made Sensitizers 1581

B. J., Jan. 26, 1917, p. XI

Ilford Ltd., advertise "Sensitol" Green and "Sensitol" Red, stating that these are equal to the best German product and prepared under the direction of Professor W. J. Pope. The prices in England are about \$10 a gram.

- Electric Ignition for Flashlight C. N. Bennett 231

B. J., 1917, p. 45

Describes the use of iron fuse electric ignition for firing flash powders, a very thin iron wire being used and ignited from a storage battery.

- The Use of Supplementary Lenses 2631

B. J., 1917, p. 44

Article dealing with the use of spectacle lenses as supplementaries to the ordinary lens systems. It is pointed out that spectacle lenses are made in diopters, a spectacle lens of 1 diopter power having a focal length of 1 meter, one of 2 diopters of half a meter, and so on. A table is given for the effect of supplementary lenses of various powers upon the focal length of lenses differing from 3 to 8 inches in focal length, assuming a separation in two lenses from  $\frac{1}{2}$  to 1 inch.

- The Making of Orthochromatic Filters C. Smyth 266

B. J., 1917, p. 37

Account of a meeting at the Croydon Camera Club at which Mr. Smyth, formerly at Wratten & Wainwright, described the preparation of light filters. The article contains a number of practical suggestions arising from his experience in the subject.

- Lens Shades and their Value W. S. Davis 2672

Camera, 1917, p. 1

Describes some simple forms of lens shades.

- A New Process of Stellar Photometry 2915

Phot. J. Amer., 1917, p. 72

A process developed by H. T. Stetson at the Yerkes Observatory. The principle involved is to measure the energy absorbed from a beam of light by the silver grains in the stellar image on a photographic plate and to interpret such absorption in terms of stellar magnitude.

- The Adaptability of the Eye to the Illumination

Photo Era, 1917, p. 9

An article from the Eastman Kodak Publicity Department.

**Kodak Bromide Pictures**

B. J., 1917, p. 50

Review of a new booklet published by Kodak, Ltd., written by a number of well known authors who have used the Kodak bromide papers.

Mr. James Golding, for some time in charge of the Order department of Messrs. Kodak, Ltd., at Wealdstone, has been appointed to succeed Mr. Edward Smith as manager of the Paget Prize Plate Company, Ltd.

B. J., 1917, p. 9

**The Boulton and Watt Legend of Photography in the Eighteenth Century**

B. J., 1917, pp. 18, 33

An historical discussion of a story investigated by the Royal Photographic Society in 1863 of the production of mechanical paintings by a photographic method in 1791. It is shown that there is no probability that this represents any participation of photography.

**Photo-Engraving**

**A Trip Through the Colortype Plant of Zeese Wilkinson Co.,  
New York**

K0733

Inset in Printing Art, Jan., 1917

A beautifully illustrated account of the commercial manufacture of three-color engravings, unusually free from glaring errors in explaining the theory of the process.

**A New Rotogravure Press**

M0713

Inland Printer, 1917, p. 685

Announcement of a new press by Wesel Manufacturing Co.

**Decalcomania Transfers**

0725

Process Work, 1916, p. 75

A description of the production of the transfer paper for use in this work.

**Prints for Reproduction**

07001

B. J., 1916, p. 2

Suggests that if the engraver is given a glossy print to work from (as he prefers) when the original is of a different character, he should be shown the original in order not to misinterpret it, but it should be protected in order to avoid the damage it is likely to sustain in an engraver's workshop.

**Deep Etching Aluminum**

07006

Process Work, 1916, p. 75

Failing perchloride of iron, hydrochloric acid is recommended; this necessitates strong resist. Other formulae are also given.

**Electrolytic Etching**

S. H. Horgan 07006

Inland Printer, 1917, p. 636

A note on the possibility of electric etching in which it is suggested that because it is not practical there may be something fundamentally wrong with the principle. (It is much more likely to be because it costs more than the current methods.)

**Cost of Materials, Light and Power**

J. C. Buckbee

Inland Printer, 1917, p. 637

Shows what items make up \$1,000 of expenditure for materials in photo-engraving. The cost of copper and zinc amounts to more than half of the total.

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## Physics

**Distribution of Energy in the Visible Spectrum  
of an Acetylene Flame**W. W. Coblentz and  
W. B. Emerson

Bull. Bur. Stand., 1916, p. 355

The authors find that with the flat acetylene flame the emissivity varies with the thickness and the energy distribution can not be standardized. Data on this type previously published are withdrawn and new data given on a cylindrical flame, which operates under conditions of much greater reproducibility. The energy distribution with "Bray" and "Crescent Aero" burners is found to be practically the same.

**The Duration and Intensity of Twilight**

H. H. Kimball

Monthly Weather Review, 1916, p. 614

Definitions of twilight, tables of duration and intensity. The following are illuminations in foot candles from several sources: zenithal sun, 9600; sky at sunset, 33; sky at end of civil twilight (sun 6 degrees below horizon), 0.4; zenithal full moon, 0.02; quarter moon, 0.002; starlight, 0.00008. This number of the Weather Review contains several other interesting articles on twilight phenomena.

**Effects of Brightness and Contrast in Vision**

P. G. Nutting

Trans. Ill. Eng. Soc., 1916, p. 939

Results of work on threshold and glare sensibilities done in this laboratory.

**A Study of the Economics of Office Building Lighting**

S. G. Hibben

Trans. Ill. Eng. Soc., 1916, p. 976

Comparison of the lighting of typical offices by different methods, consideration being given to the wiring, fixtures, upkeep and other details of service.

**Colored Glass in Illuminating Engineering**

H. P. Gage

Trans. Ill. Eng. Soc., 1916, p. 1050

Deals with optical transmission, processes of manufacture, commercial practicability and industrial uses of various shades of colored glasses. Includes a number of spectrograms and transmission curves.

- The Laws of Reflection and Transmission of light T. W. Rolph  
 Trans. Ill. Eng. Soc., 1916, p. 1144

A concise presentation of the fundamental principles of regular, spread and diffuse transmission and reflection, applied to the optical media used in illuminating engineering, with illustrative diagrams.

- The Luminous Efficiency of the Radiation E. Karrer  
 from the Electric Arc  
 Jour. Frank. Inst., 1917, p. 61

Data are given on a number of different types of arc operated under stated conditions. Efficiencies range from 0.0034 to 0.225 without lamp accessories.

- The Focometry of Lens-Combinations A. Anderson  
 Phil. Mag., 1917, p. 157

A modification of the ordinary nodal-slide method of measuring the focal length without the necessity of using parallel light.

- An Investigation of the Relative Sensibility of the W. W. Coblentz and  
 Average Eye to Light of Different Colors, and W. B. Emerson  
 Some Practical Applications to Radiation  
 Problems  
 Phys. Rev., 1917, p. 87

The visibility curve of the average normal eye, using 125 observers, is wider than previously observed. The point of maximum sensibility is at wave-length 0.5576 $\mu$ . A cylindrical acetylene flame was used as a source of spectral light, a new determination of the energy distribution having been made. They obtain for the mechanical equivalent of light 1 lumen = 0.00161 watt, agreeing well with the result of Ives, Coblentz and Kingsbury. Nutting's curve gives a value of 0.00120.

## Photochemistry

- ✓ The Luminescence of the Iodide of Millon's Base H. B. Weiser  
 J. Phys. Chem., 1917, p. 37

Under conditions of rapid decomposition—as at about 400°C—the reaction absorbs heat and emits light. The light is very bright and of a violet color. A discussion of the chemiluminescence of mercury compounds is given.

## General and Inorganic Chemistry

- Sodium Thiosulfate T.W. Hutchins and A.C. Dunningham 1541  
 Chem. Abst., 1917, p. 219

The process is designed to do away with the necessity of evaporation in crystallizing out the thiosulfate. This is accomplished by making a paste of sulfur and sulfite in theoretical proportions or an excess of either in such absolute amounts that the water is supersaturated with respect to thiosulfate. British Patent 12599.

## Literature of the Nitrogen Industries, 1912-1916

H. H. Hosmer

Gen. Elec. Rev., 1917, p. 76

The first of a series of articles giving in convenient form the essential statements of papers and books on the nitrogen industries published during the last five years, in inverse chronological order, with reference. This installment includes a table of contents of the entire series.

## Anhydrous Hyposulfites

E. Marburg and G. Münch

Chem. Abst., 1917, p. 280

Stable anhydrous hyposulfite is obtained by adding about 50% its weight of aniline to a solution of the hyposulfite and evaporating. U. S. Patent 1207782.

## The Hydrolysis of Iron Ammonium Alum

W. N. Rae

Trans. Chem. Soc., 1916, p. 1331

The precipitate from ferric ammonium alum solution on keeping is found to have the composition 2 molecules of iron sesqui-oxide plus 1 molecule of sulfuric anhydride. The color of iron alum alone and in the presence of other substances has been measured, and attributed to a soluble form of the basic salt above. Concentrated sulphuric acid precipitates the anhydrous alum.

## The Measurement of Electrolytic Conductivity. II.

E. Washburn and K. Parker

J. Am. Chem. Soc., 1917, p. 235

Discusses conditions of maximum sensitivity of the telephone receiver and means of tuning this to the frequency of the current employed.

## Inconstancy of the Solubility Product. II.

A. E. Hill

J. Am. Chem. Soc., 1917, p. 218

Evidence that the solubility product in many cases decreases with increasing concentration.

## Heterogeneous Equilibrium between Aqueous and Metallic Solutions

G. McP. Smith and T. R. Ball

J. Am. Chem. Soc., 1917, p. 179

Deviation from the mass law expressions (for isohydric depression of solubility) attributed to formation of complexes.

## Manufacture of Asbestos Fabrics

A. Heil

Caoutchouc, 1916, p. 9080

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Colloid Chemistry

## Theory of Vegetable Tanning

A. R. Procter and J. A. Wilson

Trans. Chem. Soc., 1916, p. 1327

In continuation of Procter's work on hardening, etc., of hide and gelatine, it is shown that the combination of tannins and hide fibre, and the effect of acids and neutral salts in the tanning process is explained by the existence of interfacial potentials and the neutralization of oppositely charged colloids. Formulæ are deduced on the basis of Donnan's theory of membrane equilibrium.

- Reversibility of Sulphide Sols.** S. W. Young and W. R. Goddard  
J. Phys. Chem., 1917, p. 1

Evidence is produced to show the complete reversibility of several such sols. with respect to hydrogen sulphide, and for the protection of zinc sulphide hydrosol against potassium chloride by hydrogen sulphide.

- Colloidal Solutions of Copper Sulphide** S. W. Young and R. Neal  
J. Phys. Chem., 1917, p. 14

- The Vulcanization of Caoutchouc and the Possibility of its Regeneration**  
Caoutchouc, 1916, p. 9092  
Review of recent work by Harries on this problem.

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## Organic Chemistry

- Tannin from Indian Sumach** Puran Singh  
J. Soc. Chem. Ind., 1917, p. 39

The yields of tannin obtained from the above are much the same as those from European Sumach, namely 10 to 20%.

- Constitution of Cane Sugar** W. N. Haworth and J. Law  
Trans. Chem. Soc., 1916, p. 1314

A study of the hydrolysis of octamethyl sucrose leads the authors to suggest a new formulation with an ethylene oxidic structure.

- Sulphonation of Organic Compounds** A. Heinemann  
J. Soc. Chem. Ind., 1916, p. 1008

A small quantity of iodine greatly accelerates sulphonation and eliminates carbonization. (Brit. Pat. 12260-1915).

- Chromium Compounds of Azo Dyestuffs** Soc. Chem. Ind. Basee  
J. Soc. Chem. Ind., p. 1255

Chromium compounds of orthoaminophenols are diazotized and coupled, yielding "half-chrome" dyes. (Brit. Pat. 15456-1915).

- Preparation of Alkylamines** H. Krause  
J. C. S. Abst., 1916, (i) p. 793

Aliphatic nitro compounds, like aromatic nitro compounds, can be reduced by iron in presence of a small quantity of hydrochloride, though more slowly, since the resulting amine precipitates the iron from solution.

- The Paint that Won't Come Off**  
Brass World, 1916, p. 358

Elaterite, elastic bitumen, or mineral caoutchouc is refined and made into paint. Gives a coating when dry which is claimed to consist of 99% pure carbon and which resists acid, alkali, water, electricity, oxygen and nitrogen. The coating does not crack or peel. Vast beds of the raw material exist in eastern Utah.

## Analytical Chemistry

- Notes in Regard to Titration of Sulfuric Acid C. R. Gyzander 1511  
Chem. News, 1916, p. 260

The claim is made that when various amounts of acid are titrated with 0.2N sodium hydroxide, employing phenolphthalein, lacmoid, methylorange, and dimethylaminoazobenzene, results with phenolphthalein are always higher than with the other three indicators, but that when 0.1N sodium hydroxide is used identical results are obtained with all four indicators. Lacmoid is recommended for titrations of commercial sulfuric acid for evaluation of sulfuric anhydride content.

- Reagents for Use in Gas Analysis V. R. P. Anderson  
J. Ind. Eng. Chem. 1916, p. 999

Fifth of a series of papers on this subject giving details of best procedure.

- The Titration of Some Bivalent Metal Sulfates H. S. Harned  
by the Conductance Method  
J. Amer. Chem. Soc., 1917, p. 252

Pure single substances were studied for the most part, but satisfactory approximate method for the determination of magnesium in dolomite has been worked out.

- The Interference of Thiosulfates, Ferrocyanides and Ferricyanides in the L. J. Curtman and B. R. Harris  
Detection of Iodide with Palladium  
J. Amer. Chem. Soc., 1917, p. 266

Excess of palladium and boiling the reaction mixture tend to overcome these interfering agents.

- Determination of Potassium as G. P. Baxter and M. Kobayashi  
Perchlorate  
J. Amer. Chem. Soc. 1917, p. 249

The difficulty connected with the final washing of the perchlorate has been further lessened so that more concordant results are obtained.

- Coal Analysis. Final Report of the Joint Committee of the American Society for Testing Materials and the American Chemical Society.  
J. Ind. Eng. Chem. 1917, p. 100

The official methods recommended in order to obtain greater uniformity as well as greater precision in the analytical results of different analysts are given in detail.

- Determination of Silver in Protein Preparation. H. Watterson  
J. Chem. Soc. Abst., 1916, ii, p. 577

Method suitable with bio-colloid preparations of silver, which also contain chlorides. Two tenths to .5 gm. is heated with 10 cc. concentrated sulphuric acid and 2 cc. concentrated nitric till nitrous fumes cease, cooled and diluted with 25 cc. water, evaporated, and heated 30 minutes, then diluted with 100 cc. water and titrated with N/10 thiocyanate.

## Engineering

- What "Scientific Management" did for My Office By Wm. H. Leffingwell  
System Magazine, 1917, p. 68
- It Pays to Watch the Dump By R. P. Warner, Third Vice-President  
of Griggs, Copper & Company  
System Magazine, 1917, p. 97
- How We Hold Our Men By Disston, President Disston & Sons, Inc.  
System Magazine, 1917, p. 115
- 41 Ways to Save Time in an Office By Wm. H. Leffingwell  
System Magazine, 1917, p. 139
- Jobbing Work and Efficiency By A. Carpenter  
The Engineering Magazine, 1917, p. 633
- How to Set Shop Standards By H. Shepard  
The Engineering Magazine, 1917, p. 651
- The Taylor System in Franklin Management By D. Babcock  
The Engineering Magazine, 1917, p. 711
- Shop Schools for Apprentices By Entropy  
American Machinist, 1917, p. 48
- Encouraging Thrift in Workmen By Entropy  
American Machinist, 1917, p. 109
- Time Studies for Rate Setting as Originated by Dr. F. W. Taylor By G. Barth  
American Machinist, 1917, p. 177
- Putting the Final "O. K." on a Job By W. J. Tewksbury, Superintendent  
Automatic Electric Company.  
Factory Magazine, 1917, p. 174
- Warring on Waste By F. H. LeMont  
VIII—Changing Methods to Reduce Wastes  
Factory Magazine, 1917, p. 178
- Practical Ways to Cut Costs  
Factory Magazine, 1917, p. 188
- Scientific Management—Mistaken Ideas of Efficiency By Engineer  
Engineering as Applied to Improving Manufacturing Results.  
The Metal Industry, 1917, p. 22

# Patent Abstracts

## U. S. Patents

1213968

C. Stickle A1412

An Electrical Control for Paper Making Machines. As the sheet of paper dries it shortens and thereby increases its tension. This actuates an electrical control which turns the drying heat on or off, as required.

1201260

F. Collischonn and F. Ruppert A1513

Process for Manufacture of Cellulose Esters. Acetone-insoluble acetates are rendered soluble in acetone by heating to 90-110° C. in a solution containing water but no other hydrolytic reagent until the product dissolves in acetone but not in ethyl acetate.

1212628

H. O. Gowlland A263

A Smoothing Head for Lens Manufacturing comprising a hemispherical rubber vessel, which is suitably inflated and provided on its convex surface with metal abrading disks.

1210400

R. S. Becker, Assigned to E. K. Co. B13

A Photographic Paper bearing on the unsensitized side a brand or mark printed in an ink which is substantially of the same color as the back of the paper, an example of such ink being barium sulfate, casein and formaldehyde when white paper is employed. Such ink is wholly invisible from the emulsion side of the paper and is visible on the other side only when viewed by reflected light at a certain angle.

1214552

A. Keller-Dorian K1212 K134

A Film for Photographic Projection in Colors. The Unsensitized face of the film base is molded so as to have a large number of minute convex protuberances forming minute lenses so located that they will form a multitude of images of the disk of the main camera lens upon the sensitive emulsion.

1214016

A. Dawson K2116

A Three-Color Photographic Camera in which the usual light splitting mirrors are located not upon sheets of plane glass but upon the plane faces of thin very low power plano convex lenses. A more exact agreement of images is alleged. (See Brit. Patent 24538-1912).

1213184

L. Gaumont, Assigned to E. K. Co. K31 K/23

An Apparatus for Taking Three-Color Motion Picture Films. The pictures are taken in groups of three, one above the other, on an intermittently moved film. The objective comprises three lens elements situated one above the other, so as to form a unit, while permitting individual regulation and proper focusing so that the pictures will be furnished in equal size and will be readily superposable during the subsequent projection. This optical system may be also moved vertically as a unit relative to the film window.

1214798 J. Lehmann, Assigned to Carl Zeiss K32 K/23

An Apparatus for Projecting Colored Motion Pictures of the type in which three positives of different colors are projected simultaneously through three objectives. A shutter is arranged between the condensers and the film and auxiliary lenses are provided to form an image of the shutter within the three objectives. Thus, the light rays through the three objectives will be turned on and off simultaneously.

1213037 J. E. Thornton, Assigned to J. Owden O'Brien K34 346

An Apparatus for Printing Motion Picture Film of low sensitiveness such as bichromated film. The object is to print such film at the rate of 500 to 600 feet an hour or as fast as silver bromide film is now printed. Another object is to secure accurately placed perforations so that different colored films may be superposed in registry for multicolor work. The film is perforated prior to printing and fed through a machine where several pictures are simultaneously printed but where no two adjacent pictures are allowed to print at the same time, loops being interposed between the printing pictures in order that each picture may be independently placed or adjusted by registering pins or sprockets. As an illuminant a mercury vapor lamp of 6000 candle power is employed and a grid of vertical leaves is interposed between the light and the film so that only perpendicular rays will perform the printing, thus avoiding spreading of light rays. The grid is moved during exposure to avoid printing its image.

1211904 M. J. Wohl and M. Mayer, Assigned to Prizma, Inc. K/24

A System of Motion Picture Color Photography which uses a film carrying groups of four different color-value images. The rotary screen, which moves in front of the projection lens in timed relation to the movement of said film, is provided with two sets of balanced complementary colors, the object being to reduce the eye strain which would be present if persistence of vision was depended upon to blend four colors projected entirely in succession.

1213038 J. E. Thornton, Assigned to J. O. O'Brien K/43

A Motion Picture Film comprising a celluloid base and three superimposed layers of color section photographs in registry thereon.

1214940 H. Miller, Assigned to Brewster Film Corporation KJ88

A Process of Producing Colored Photographic Images. The silver image is converted into silver iodide which acts as a mordant toward basic aniline dyes. It seems to be very close to the Traube process.

1211588 E. Josephson, Assigned to Pantasote Leather Co. P5-1517

A Process for Recovering Camphor from Celluloid. The celluloid is pulverized in a pebble mill in the presence of water and the paste thus obtained is distilled.

1210215 F. Le R. Satterlee, Jr. X288

A Support for X-Ray Negatives comprising a celluloid plate having a matte surface, the negative being clasped centrally thereon, while the matte border may have the identification data marked thereon.

1210934 A. Hayes, Assigned to Moving Advertisement Co. 034

A Holder for holding, face to face, a pair of glass plates so that one may be slid through a small distance across the other. One plate is provided with a set of screen lines and the other plate is provided with two pictures printed on alternate lines spaced at a distance corresponding to the screen lines on the first plate. When the screen plate is slid over the other plate the two pictures are alternately displayed and may give the effect of motion.

1212446 A. Boularan, dit Deval 064/89

A Flexible Film having a picture thereon in relief which is intended to receive printing ink and thereafter be used in printing motion picture positives. A bichromated film is covered on the outer face with black paper and printed through the back. After treatment with calcium hypochlorite the black paper and soluble gelatine are washed away in hot water, and the resulting relief image is tanned by successive treatments in bichromate, chrome alum and formaldehyde.

1212342 E. D. George 069

A Telephone System for transmitting sounds to the audiences in motion picture theaters in synchronism with the displaying of the pictures on the screen. An operator is located in a sound-proof compartment where he can see the pictures on the screen and talk the appropriate words into a telephone transmitter. Coin controlled receivers are mounted on the theater seats.

1213613 1212614 1213615 1213616 C. E. Fritts, Dec'd 069

Josephine H. Fritts, Administratrix. Assigned to J. D. Myers

A System of Reproducing Sounds in which optical and photographic arrangements are used in place of the mechanical means usually employed. When a diaphragm is vibrated by sound waves it oscillates a shutter, thereby vibrating a beam of light across a moving sensitive paper strip or film. The latter is developed and run through the reproducing apparatus which includes a selenium cell controlling a telephone circuit. The developed film controls the light falling upon the selenium cell and therefore is alleged to vary the electrical characteristics of the telephone circuit in exact agreement with the original sound waves, which will therefore be reproduced accurately.

The patent application out of which these patents grew was filed on October 22nd, 1880, over thirty-six years ago. This is probably the record for delays of this kind. For vigorous comment upon one of these applications by Commissioner of Patents, see Ex-Parte Fritts 227 Official Gazette, page 737. That discussion shows that there were at one time three groups of claims in one of these Fritts applications which were introduced to cover the entire art of producing motion pictures. The Commissioner refused to grant them.

1213150 H. C. Bullis 069 323

A Method of Producing Sound Records for Talking-Motion-Picture Films. Through suitable apparatus the sound vibrations alter the intensity of an electric light and these variations are recorded photographically upon a moving film. From the negative thus obtained a positive is printed upon bichromated gelatine containing fine iron particles uniformly distributed therein. When the soluble parts are washed away the remaining film will provide a plurality of transverse lines of varying iron content having thus a variable magnetic permeability. When this strip is drawn through an air gap in a magnet located in a suitable telephone system, the original sounds will be reproduced.

1213176

R. A. Fessenden 069-323

A Device for Transmitting Sound in large volume to the audiences of motion picture theaters in timed relation to the exhibition of the pictures. A telephone transmitter into which a speaking voice or a phonograph plays is connected up to operate a Fessenden oscillator. This oscillator is connected with a large diaphragm which also serves as the screen onto which the motion pictures are thrown.

1213883

I. Kitsee, Assigned to The Cort-Kitsee Co. 069-323

A Combined Phonograph and Motion Picture Machine. The latter is driven by a pneumatic engine, the valves of which are electrically controlled from a commutator driven by a phonograph; thus the instruments are run in synchronism.

1214851

R. L. Watkins 0946

An Apparatus for taking Photomicrographic Motion Pictures, such, for example, as those which show the movement of the blood corpuscles and cells.

1213925

A. C. McCloskey 1313/71

Assigned to Process Paper Mfg. Co.

An Iron Printing Paper. It is covered on the front with the usual ferric coating and on the back with a ferrous coating which may be derived from a ferric coating by a suitable exposure to light. When the paper is immersed in the clearing solution, the ferrous salts on the front face, produced by the action of the light, and the ferrous salts on the rear face will be dissolved off and the stains, which often appear upon the rear face of paper of this type, will be avoided.

1211683

H. R. Darling, Assigned to E. K. Company 210-2164

A Lever pivoted about a longitudinal axis at the forward end of the folding base-board of a Camera. It can assume three positions at right angles to each other. In the first of these positions it acts as a latch to hold the bed of the camera locked in its closed position. In its second position it acts as a foot to support the bed of the camera when a picture is taken in the upright position, and in its third location it acts as a leg to support the bed of the camera when a horizontal or "landscape" picture is being taken.

1210534

W. A. Riddell, Assigned to E. K. Company 2102

A Focusing Device for Cameras including a segmental depressed portion in the front bed and a lever pivoted therein which is connected with the lens carriage by a pin and slot structure.

1213544

W. A. Riddell, Assigned to E. K. Company 2102

A Lock for fastening the Lens Carriage on a Camera in the correct position upon the track for focusing. It comprises a locking cross-head upon the under side of the carriage which is actuated by a rotary cam mounted on the top of the carriage and turned by pressing upon a transversely reciprocating finger piece.

1213731

C. Bornemann, Assigned to Ansco Company 2102

A Focusing Mount for the Lens and Shutter of small Folding Cameras. The focusing movement is imparted to the shutter and lens by means of a rotary sleeve having helical slots therein which co-operate with pins on the shutter. The claimed features relate chiefly to conveniences in assembling and adjusting the mechanism.

- 1214453 J. Goddard and W. S. Hutchings 2102  
Assigned to Seneca Camera Company

A Focusing Device for small collapsible Roll Film Cameras. The lens and shutter are mounted in a frame which slides rearwardly and forwardly. This frame is provided with pins which engage in inclined slots in a transversely moving focusing member, so that, when the latter is moved, the slots and pins cam the frame carrying the lens and shutter to the desired position. The focusing member is provided with a notch into which a catch automatically slips when the lens is in the infinity position. The structure is such that the operation of the device tends to automatically return the lens to the infinity position after it has been used at some other point.

- 1210241 R. N. Wilkinson, Jr. 215

A Roll Film Camera in which the winding roll is operated by a spring motor controlled by a push button and gearing so that it will wind up one section of film automatically each time the button is pressed.

- 1213067 C. Bornemann, Assigned to Ansco Company 215

A Small Collapsible Roll Film Camera. The lens front is connected to the camera body by four arms, the inner ends of which are pivotally mounted on the body while the outer ends thereof slide in slots on the lens front. Springs constantly tend to turn the arms to the outward or open position, and when the camera is closed this tendency of the springs is overcome by a latch mechanism.

- 1213687 G. Pelham 215

A Device for accurately stopping the winding of the film in a roll film camera after each fresh section of film has been brought before the exposure opening. The film is provided with pairs of perforations, one pair being located at the end of each exposure area. The camera back is provided with spring fingers, which automatically slip into the perforations in the film. These fingers are controlled by a push button.

- 1214936 J. A. Maker 215

A Film Spool Holding Mechanism for Roll Film Cameras. The spool centers in each film chamber are connected by means of a lever and rod so that they can be moved toward and from each other simultaneously by merely pressing a button.

- 1215142 J. P. C. Granger, Assigned  $\frac{1}{2}$  to G. Schielke 215

A Film Winding Device for Roll Film Cameras. The winding reel is driven from a spiral spring motor. This motor is controlled by a ratchet and pawl, the latter being mounted upon a carriage which travels along a screw-threaded shaft. The pawl carriage is electro magnetically controlled by a solenoid operated by a push button.

- 1210804 P. W. Howland 2153

An Exposure-Identifying Device for Roll Film Cameras. The back of the camera is provided with a set of longitudinally movable transparent strips bearing opaque letters or numerals which can be selectively moved over a transverse opening in the camera back. When the desired letters are in place over said opening, light is permitted to enter and print the letters through the opening onto the film.

1212447 H. J. Brown 2153

A Backing Strip for Films for use in printing written inscriptions on the negatives either transversely or longitudinally thereof. The backing paper is provided with a transverse slot and a longitudinal slot corresponding to the edges of each picture space on the negative film and over each slot there is provided a strip of carbon paper.

1208982 J. J. King 216

A Wet Collodion Plate Holder Bar, which is provided with a plurality of pockets to catch and retain any dripping of silver nitrate solution.

1209239 F. J. Wende 216

A Process Camera with a Screen Holder holding more than one cross line screen, and means to bring into operation one screen after the other on the same plate while the operation is being made.

1211302 R. G. A. Dutert 217

An automatic Focusing Device for Copying or Enlarging Cameras which includes a set of links connecting the lens, object board, and image board, so that a focus is always maintained regardless of the scale of magnification used.

1214132 C. H. Carleton, Assigned  $\frac{1}{2}$  to Rene Whaite 2177

A Copy-Holder for Enlarging or Copying Cameras provided with a ground glass for focusing and a clear glass against which the copy is held.

1212884 A. B. Baron and C. M. A. Guinard 219-083

A Camera adapted to be attached to the bottom of an Airship so as to take a series of pictures of the ground over which the ship is passing. It includes a shutter and mechanism for intermittently moving the film, both being actuated by a spring motor controlled by a friction brake, so that a precise speed of operation will be obtained. Knowing the optical angle of the objective as well as the surface covered by the objective at a determined altitude, the altitude of the machine may be determined and from the data so obtained the speed of the airship may be calculated, the speed of the spring motor being considered.

1215290 J. A. London 2193

A Photographic Camera provided with a rear chamber for receiving a special pack of films or plates. A developing box is arranged below such chamber with which it is connected by a slot. The front plate in the pack, after exposure, is dropped through the slot into the developer.

1213974 J. B. Taylor, Assigned to General Electric Co. 2231

A Projection Apparatus in which the illuminant is a special form of incandescent lamp, the filament in which consists of a plurality of parallel but separated sections. Behind the lamp is a mirror so located that it forms images of the filament sections in the spaces between the real filament sections.

1213975 J. B. Taylor, Assigned to General Electric Co. 2231

An Incandescent Lamp for projection purposes having a coiled filament with spaced parallel sections in the same plane and separated from each other a distance equal to the diameter of the coil.

1210834 W. B. Poynter, Assigned  $\frac{1}{2}$  to W. E. Mayer 231

A Flash-Light Apparatus including a collapsible cabinet and an electric ignition system. The latter is provided with a movable slide for moving the fresh cartridges into firing position and for ejecting the used cartridges.

1211993 W. W. Wonner and C. W. Simon— 241  
Wonner Assigned to N. C. Stabley

A Photographic Printing Machine provided with spring clamps for the negative and for a mask, the two sets of clamps being operated simultaneously or independently.

1212022 G. Croston 241

A Photographic Printing Machine provided with a mask in the form of a roller-blind having apertures of various shapes and sizes. The machine is provided with two ground glass diffusing screens, the lower one being vertically adjustable. It is also provided with an automatic device for determining the length of exposure. An electric motor turns a screw-threaded shaft along which a half nut rides for a pre-determined time and at the end of its path of movement strikes against a lever and cuts off the actinic light, at the same time opening the lid of the machine.

1214408 C. F. Barr and W. R. Miller 251

A Device for Supporting Film during developing and other fluid-treating operations. It comprises a float carrying depending clamps which grip the ends of a film strip.

1212498 L. W. Kelsay, Assigned  $\frac{1}{2}$  to J. L. Grindle 2541

A Device for Developing Roll Films. It comprises a reel composed of a central hub and two sheet metal ends, the sheet metal ends having stamped therein spiral grooves with perforations in the tops of the grooves. In use, the natural tendency of the film to curl causes it to follow the grooves of the ends upon slight pressure. When the film is thus coiled on the reel with its convolutions spaced apart, it is immersed in a developing tank.

1213489 F. A. Binder 2541

A Tank for Developing Roll Film. It comprises a spiral sheet metal support mounted upon a rotary desk and a support for the film spool so arranged that the film is automatically guided to and wound upon the spiral support when the latter is rotated. A light trapped fluid inlet and outlet is provided.

1212228 R. John, Assigned by Mesne Assignments to 255  
Iconochrome Company of America, Inc.

A Dark-Room Lantern provided with an inclined safe light window and a window for giving a strong white light during the reversal of color plates. The casing of the lantern is hollow and the inner wall thereof is provided with openings which are out of registry with the openings in the outer wall, hence forming a light trap that permits ventilation.

1211347 A. Plofchan and J. Zuraw 2614

A Camera Support including a universal joint and a screw-threaded tang for attaching it to wooden objects.

1214250 A. Wollensak, Assigned to Wollensak Optical Co. 2623

An Automatic Between-the-Lens Photographic Shutter of the type that is provided with pivoted blades moving oppositely to form a symmetrical central opening.

1214699 P. J. Marks, Assigned to E. K. Company 2623

A Between-the-Lens Shutter of the "Set" Type. The motive power is produced by winding a spiral spring on a shaft. The power is transmitted from this shaft to the ring which moves the shutter blades by means of two cams mounted on said shaft, the first of which causes the shutter to open and the second of which causes the shutter to close. An improved mechanism for regulating time and bulb exposure is provided.

1215284 R. Klein and T. Brueck 2623

A Between-the-Lens Shutter of the "Automatic" Type. A simplified mounting for the ring which operates the shutter blades is provided and a weighted lever acts as a retarding means for controlling the speed. The retarding means, as well as the mechanism for giving time and bulb exposure, is controlled by a pivoted lever which has an opening through which the lens projects.

1211664 E. E. Bjorling 2626

Another Device for Automatically Operating the Camera Shutter, at predetermined time after it is set so that the operator may include himself in the picture. It is controlled by an ordinary watch mechanism.

1212383 S. Nagy 2626

A Spring Actuated, Pneumatic Controlled Shutter Actuating Device whereby the operator can include himself in the picture.

1204030 G. A. H. Kellner 263

A target for a lens centering instrument so arranged that both cross-hairs may be sharply focused even when measuring astigmatic lenses. One cross-hair is vertically mounted on a front carriage while a second cross-hair is horizontally mounted on a rear movable carriage and a lens on this second carriage projects forwardly the image of the horizontal cross-hair.

1210896 S. Brown 264

A Finder for Cameras which have Rising Fronts. The finder is tiltable about a horizontal transverse axis and a level is provided adjacent the finder. While holding the camera level the finder is tilted until the desired view appears therein. The angle of tilt is read off on a scale and the rising front of the camera is raised through the amount thus indicated, the rising front being provided with a scale calibrated to correspond to the scale of the pivoted finder. A similar arrangement has been used for a number of years on the Una Camera sold by James A. Sinclair and Company of London and described in successive numbers of the British Journal Almanac.

1212137

H. Gindele 2653

A Photographic Film Cartridge so arranged that any particular exposed portion of the film may be removed for development without preventing the subsequent use of other portions of the film in the camera. The film is provided with transverse slots at distances corresponding to the edges of the picture areas. In back of each of these slotted portions there is arranged a gummed sticker which is nominally in detachable connection with the paper backing of the film, but which can be used to stick the loose ends of the film to the backing paper when an intermediate portion of said film is torn out for development.

1213514

F. W. Lovejoy, Assigned to E. K. Co. 2653-12111

A Photographic Roll Film. The film strip is provided along one edge with sets of protuberances, one set being located adjacent each picture area and the number of protuberances in each set corresponding to the number of the picture area. For example, there will be five protuberances opposite the fifth area, six protuberances opposite the sixth area, etc. By this means a particular picture area can be identified even after the backing paper has been separated from the film strip.

1213694

W. J. Schultz, Sr. 2654

A Film Roll Holder designed to be interchangeable with the ordinary double plate holders such as are used on our Cycle Graphic and Premo Plate Cameras. It comprises a long, narrow chamber of the same thickness as a plate holder, carrying at one end two thicker chambers containing the winding roll and the feeding roll respectively.

1209395

A. W. Church, Assigned  $\frac{1}{2}$  to Clarence C. Sinnott 267

A distance Finder to enable a photographer approximately to determine the distance to an object so that he can set his focusing scale accurately. Sighting means is provided which in use is inclined to aim at the feet of the person whose picture is to be taken and is so calibrated that the distance indicated by such inclination can be read off on a scale carried by a pendulum.

1211780

A. C. Stewart 2682

An Actinometer for Photographic Purposes in which the light from the subject is reflected by a diffusing surface to an inclined mirror and thence through a filter of actinic color to the observer's eye. The light from the subject is progressively cut down by a stop mechanism until no light from the subject can be seen. A scale connected with the moving parts directly indicates the exposure necessary. A special feature is an arrangement whereby the existence of appreciable light is tested in comparison with a condition of darkness.

1213485

A. Herz 2682

A Combination of an Actinometer with the lens and shutter of a camera. Specific actinometers disclosed are either of the type in which an image is formed and the illumination decreased until image detail disappears in the shadows, or the type in which the actinometer image is compared with a standard illuminant. The arrangement is such that the moving actinometer parts will automatically adjust both the speed of the shutter and working aperture of the lens. A third adjustment compensates for the speed of the sensitive plate or film.

1212355 H. L. Ide, Assigned  $\frac{1}{2}$  to Roy W. Ide 2683

An Actinometer combined with a Roll Film Camera. A disk of actinometer paper is provided on the end of the film spool and an observation window is adjustably located in the end of the film spool chamber, whereby the various elements of the sensitive paper may be printed out to measure the light in the usual way. A light trap prevents fogging of the camera film by stray light from the actinometer.

1211497 A. S. Spiegel 287-034  
Assigned  $\frac{1}{2}$  to R. Glendinning and  $\frac{1}{2}$  to G. Felsenthal

A holder for Animated Photographs of the type in which a lined screen is moved over a photograph composed of a plurality of pictures divided into vertical strips, the distance apart of which is equal to the distance between the lines of the screen. It is composed of pasteboard folded in such a way that the photograph can be easily inserted underneath and in registry with the screen and fastened into position.

1210744 J. T. Wells, Assigned to The Edwards Mfg. Co. 3201

A Film-Feed Mechanism for intermittently moving the film in a motion picture camera or projector. It comprises a constantly turning driving disk and an intermittently driven gear which is disposed within the periphery of the operating disk for compactness.

1212570 M. Segel 3201  
A Modified Geneva Movement for intermittently feeding motion picture film.

1213147 T. H. Blair 3203  
A Shutter for Motion Picture Projectors. It comprises a rotary disk provided with an opaque sector corresponding to the usual sector in the ordinary shutters, but provided with groups of relatively narrow sector-shaped light projecting openings and with sets of radially arranged perforations, so that flickering is avoided and the picture given adequate illumination. It is alleged that pictures may be successfully projected at the rate of only eight per second if this arrangement is used.

1214301 F. C. Hamilton, 3203  
Assigned to Eureka Projector Device Co., Inc.

A Shutter for Motion Picture Projecting Apparatus in which the sector-shaped vanes are not opaque but merely diffuse the light so that the pictures on the screen will alternate with periods of diffused light rather than darkness. The vanes are held in place on the hub by an adjustable trifurcated flat spring.

1210113 L. Sollisch, Assigned  $\frac{1}{2}$  to G. Albanese 3204

A Reel for Motion Picture Films for diminishing the fire risk when the reel is not in use. It consists of a hub provided with the usual side plates, having each a large aperture closed by a detachable door. A flanged metal band is provided which clamps around the periphery of the plates and thus forms a closed metal container.

1210909 A. F. Copersito 3204

A Reel for Motion Picture Films to limit the fire risk when the reel is not in use. A flanged metal band is clamped around the peripheral edges of the reel so as to temporarily form, in effect, a closed metallic container.

2111955 W. E. Millar 3204

A Motion Picture Apparatus for projecting advertising film continuously, the film being in an endless band. The film is wound up on the outside of a roll and fed off from the inside of the roll continuously.

1212115 G. H. Scherff, Assigned to G. H. Scherff & Co., Inc. 3205

An Arrangement for Controlling the Illumination in Motion Picture Projection Apparatus. Whenever the voltage across the arc departs from normal, a regulator, controlled by the drop in voltage across the arc, operates a clutch and temporarily connects the carbon feeding means with the moving parts of the film-feed until the carbons are at the proper distance apart.

1212853 A. F. Victor 3205

An Adjustable Condensing System for Projection Apparatus, including three lenses so arranged that the rear lens can be moved back of and into alignment with either of the other two lenses to change the focal length of the condenser, thereby adapting it to project motion pictures or the relatively larger lantern slides.

1209755 N. Power, Assigned to Nicholas Power Co. 3208

A Tension Device for Motion Picture Film Reels. The wind-up reel is driven by a belt which is kept in operative position by a tightening roller, the tightening effect of which is controlled by the tension of the motion picture film. Thus, if the film becomes too tight, the tension of the driving belt is diminished until it slips and so relieves the excess tension.

1212750 W. E. Eggleston and L. L. Chauncey 3208

A Device for Rewinding Motion Picture Film comprising a fireproof container having observation windows for watching the operation.

1214208 H. L. Miller 3209

A Signal for Motion Picture Reels which will warn the operator when the film is nearly exhausted. A gravity actuated plunger carries rolls at the bottom which bear upon the film so that as the amount of film on the reel grows less, the plunger moves downwardly until an electric contact is made just before the film is exhausted. Such contact causes a signal to be displayed.

1210665 F. W. Matthews 323

An Apparatus for Producing Synchronized Motion Pictures and Phonograph Sounds. To keep the phonograph and motion picture projector close enough to be operative, they are mounted on the same standard close beside the projecting screen and the picture producing rays from the projector are passed to a reflector in the rear of the theater and thence forwardly to the screen on the stage.

1212424 W. L. Tillotson 324

A Concave Motion Picture Screen composed of a canvas facing and a resilient backing, the curvature being adjustable by means of screw-threaded rods which connect the sides of the screen.

1211200

-L. McCormick 324 067

An Arrangement for projecting Motion Pictures. Its object is to increase the illusion by flashing a light in the rear of the screen at a time when bright lights appear in the motion picture. It includes a set of lamps behind a screen and a movable mask in front of said lights, the movement of the mask being controlled electrically in synchronism with the movement of the motion picture film.

1210960

L. McCormick 324 067

An Arrangement for Increasing the Illusion when projecting motion pictures which have lights therein such as the moon, rockets, lamps on approaching vehicles, etc. A movable light is mounted to travel on tracks which are properly positioned in the rear of the screen, the light being moved over the tracks at the correct moment by means of an electric motor.

1210961

L. McCormick 324 067

An Arrangement for Increasing the Illusion when projecting motion pictures, by flashing lights at the proper position in the rear of the screen at a time when the pictures projected on the screen are supposed to show a bright light. It includes a bank of electric lamps in the rear of the screen, the switches of which are controlled by a strip of paper selectively perforated and moved in synchronism with the motion picture film.

1210887

G. Bettini 325

A Motion Picture Apparatus in which the positive plate or film containing the pictures is held stationary while the optical parts of the apparatus, including prisms for bending the rays and the projecting lens, are moved intermittently to project the pictures in succession.

1214636

W. H. Zinn 325

A Knockdown Stroboscope. It is a toy which may be folded flat to be shipped in an envelope. When ready for use, it comprises a whirling cylinder carrying a series of pictures on its inner face, so that when the cylinder is revolved and the pictures are observed through slots, a motion picture effect is produced.

1210743

J. T. Wells, Assigned to The Edwards Mfg. Co. 341

A Machine for Printing Motion Picture Positive Film. The negative and positive films are moved step by step in contact across a suitable exposure opening.

1212259

J. A. Ramsey 342

A Simplified Machine for Printing Motion Picture Positive Film and designed to hold the superposed films without slipping to permit a high rate of speed.

1209696

L. Gaumont, Assigned to Société  
Etablissements Gaumont 358

An Apparatus for Drying Photographic Films, so arranged that the driving motor therefor will be stopped and a signal bell rung, when the film breaks. It is also provided with an automatic device for moistening the emulsion side of the film with a fluid to prevent cracking of the surface during drying. A wiper removes the excess of moisture from the film before it enters the drying chamber.

1211895

J. H. Theiss 361

A Supporting Device for Motion Picture Cameras comprising a turn-table on ball bearings by means of which the camera can be rotated to produce panoramic negatives. Upon the turntable is an angularly adjustable support. All the parts are arranged to take up wear automatically so as to avoid the "swaying" which is found in motion pictures taken on tripod heads containing worn and loose parts.

1214226

E. Schneider 361

A Panoramic Tripod Head for Motion Picture Cameras. The camera is turned about both a horizontal axis and a vertical axis by means of two worm gears which are both driven from the same worm.

1211429

W. Frank 384

A Machine applying paraffin wax to the edges of cine film strips on the emulsion side. The film is drawn through rollers and strips of solid paraffin are pressed against the edges thereof.

1209339

J. W. and L. P. Schippers 386

A Splicer for Broken Motion Picture Film which includes a pair of adjacent clamps and a key for simultaneously releasing them.

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### British Patents

13042-1915

H. Workman K3117

Prism Systems for Splitting Light beams for Three Color Work. A system of four prisms with partially silvered faces or with faces coated with a reflecting layer arranged in small areas or narrow lines may be cemented together so that the beam is divided into two or more separate beams by means of it. The arrangement is described.

101972-1916

W. B. Wescott K/28

Kinematograph Apparatus whereby successively-exposed pairs of images are obtained, each pair being made in a camera on a film by simultaneous exposure from the same view-point. The images are arranged upon the film so that the members of each pair are separated by a space which is occupied by members of other pairs of images, which pairs of images may be either kinematographic or color records. The images are obtained by means of a single lens and a half-silvered mirror, which divides the light beam into two parts, which are reflected through color screens onto the film. The film is shifted through two image spaces between successive exposures. Positive films produced from such films may be projected by a projector having color screens and lenses separated so that both images of each pair may be projected between successive film shifts, the projection being either simultaneously or successive. The lenses of the projector are adjustable so as to register the images projected on to the screen and to correct for changes in the film due to temperature shrinkage or expansion. The means for feeding the film may engage the part of the film between the lenses.

B102471-1916

W. E. Allen 084-2651

**Dark-Slides for Living Portrait Negatives.** In the arrangement for moving the ruled screen relatively to the sensitive plate the screen or plate, but preferably the screen, is held in a frame which is moved transversely against spring action by means of one or more cam surfaces upon it which cooperate with a slide on the plate holder.

12048-1915

U. Benz 048-219

**Apparatus for Making Designs by Photography.** A rosette or other design is copied in a copying camera, arranged so that the design can be rotated, and photographed in a number of positions successively, thus producing a composite design formed from the original simple figure.

18055-1915

T. R. Johnston 0713

**Improvements in Rotary Photogravure Printing Machines.** Suggests the use of flat sheets for etching, fastened around the cylinder with a rubber blanket underneath and wiped by means of smooth metal roller revolving in the opposite way to the cylinder.

14101-1915

H. Dreyfus 1513

**Cellulose Acetates.** In the production of cellulose acetates insoluble in chloroform but soluble in alcohol-chloroform, employing sulphuric acid as condensing-agent, the acetylating mixture is subjected to prolonged cooling prior to the introduction of the cellulose and the temperature during acetylation is regulated by cooling; the acetylation is stopped when a test portion shows the required insolubility in chloroform and solubility in alcohol-chloroform; the proportions of Specification 20,977/11. If glacial acetic acid is used as diluent, the crystallization produced by cooling is advantageous.

101976-1916 M. Cantoni, H. Walkker and H. Cuchet 219 083 052

**A Telephotographic Camera adapted for use on air craft,** consisting of a square box containing two mirrors so arranged that the image from the lens is reflected twice before reaching the plate, thus making possible the use of long-focus lenses.

17810-1915

E. A. Thorberg 241

**Bromide Printing Box.** Small box intended to be portable and used with a small dry battery and therefor supplied with a switch additional to the automatic switch in the camera of the box so that should the printing box be left closed the battery will not be used up since the lamp cannot be lighted unless a special key be inserted.

102545-1916

J. C. Munro 2543

Developing Cut Films. Cf. Bull. Dec. 1916.

101900-1916

E. Schieronni and I. Ullmann 315

**Kinematograph Apparatus of the kind having multiple rows of pictures on the film,** which is alternately traversed laterally and longitudinally.

# Monthly **ABSTRACT** Bulletin



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# Monthly Abstract Bulletin

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April, 1917



*The Company*

### Additions to the Numerical Classification :

J5	Combination Printing from Several Negatives.	2671	Telemeters and Focusing Scales.
026	Tourist Photography.	2672	Lens Shades.
055	Photography in Unusual Climates.	3107	Vignettters.
0946	Motion Photomicrography.	328	Advertising Projectors.
1685	Backings.	3208	Wind Ups and Re-winders.
273	Studio Reflectors and Diffusing Screens.	2109	Holders for Line Screens for "Moving Portraits".
		2833	Mounts for "Moving Portraits".

# Photography

## The Manufacture of Cine Film Stock

A1212

Mot. Pict. News, 1917, p. 1111

The concluding article on this subject.

## Remedies for Jammed Stoppers

G1

B. J., 1917, p. 58

Practical article on different methods of getting out stoppers which have become set in the necks of bottles.

## Development of Panchromatic Plates

M. Mayer G5

Il Corriere Fotografico, 1917, p. 3056

Dr. Mayer notes that the Dellaye method of developing screen plates by red light, in which they are desensitized, before developing, by a bath of bromide and bisulphite, cannot be used with the ordinary panchromatic plates.

## Tests for Hypo

G7

B. J., 1917, p. 60

As a result of a comparison of the sensitiveness of mercurous nitrate and potassium permanganate as a test for hypo, Bainbridge finds potassium permanganate to be the more sensitive and satisfactory.

## Direct Positives on Bromide Paper

G8

B. J., 1917, p. 68

Communication from the Publishing Department of the Eastman Kodak Company. Two methods are given by which direct positives can be obtained on photostat paper. The first consisting of bleaching in permanganate and sulfuric after development and then re-developing after exposure, the other of developing in the usual way, sulphiding the unexposed silver bromide and then removing the silver by means of ferricyanide sulphocyanide bleach.

## Lantern Slides Direct in Camera

G8

Phot. J. Amer., 1917, p. 79

Reprints from Camera Craft and B. J. describing in full D. Carnegie's, H. d'Arcy Powers' and W. L. G. Bennett's methods of producing lantern slides by reversal.

## Positives and Negatives by Inversion

M. Mayer G8

Il Corriere Fotografico, 1917, p. 3040

Collection of the formulæ used for transforming a negative into a positive by the permanganate and bichromate methods.

## Method of Titling Negatives

H6

Il Corriere Fotografico, 1917, p. 3056

## Putting Sky or Figures in Landscapes

J5 .

Phot. J. Amer., 1917, p. 83

## Color Supplement

K21

B. J., 1917, p. 5

Decennia Practica. This number deals with types and designs of three-color cameras.

## A New Method for the Coloring of Mounts

R. Romanelli

L5

Il Corriere Fotografico, 1917, p. 3052

The author recommends the use of an atomizer containing a solution of aniline dye.

## The Range of Contrast from Highlight to Shadow

C. E. K. Mees

01

Kodakery, Mar. 1917, p. 10

## ✓ Temperature Coefficients of the

M. Padoa and L. Mervini

013

## Action of Monochromatic Light

## on Photographic Plates and Papers

J. Chem. Soc. Abst., 1916, (ii) p. 592

Over an interval of 100° C. (-85° to 15°) the temperature coefficient of plates is 1.05 for all wavelengths. For print-out images on citrate paper, on the other hand, the coefficient varies with the wavelength. The authors claim that this difference indicates that the formation of a latent image on the plate is not due to a photochemical decomposition of silver halide into its elements, as is the case with the print-out image.

## ✓ The Latent Image

014

B. J., 1917, p. 81

Dr. Homolka of the Photographische Korrespondenz discusses a theory of the latent image as containing silver per-bromide in addition to sub-bromide. He finds that if bromide paper is exposed to daylight until completely changed, as far as visible change is possible, and is then treated with the sodium salt of phenylglycine it can be printed out under a negative and will give prints which can be toned in an ordinary gold bath while with a short exposure the paper can be developed.

## The Size of the Image

019

B. J., 1917, p. 54

For remembering the size of an image produced with different focal lengths of lens at different distances of object, the following mnemonic rule is proposed: With a 10 inch lens and a 10 foot object 1000 feet away, the size of the image is 1/10 of an inch.

Registering Sitters by Photographing  
the Number on the Plate

A. V. Chandler

0311

B. J., 1917, p. 84

Suggestions for carrying this out by having a number over the sitter's head.

**Reproducing Stained Negatives**

041-057

Studio Light, Feb. 1917, p. 10

Local yellow stains such as silver and pyro stains may in most cases be eliminated by either copying the negative in a camera, using a G filter over the lens, or by duplicating the negative by contact printing through a sheet of the said filter using a panchromatic plate.

**Dyes as Sensitizers of Carbon Tissue and Gum Paper**

/9 /82 ✓

B. J., 1917, p. 96

Translation by J. C. Warburg of an article by H. Waago from the Danish *Amator-Fotografen*. Dr. Meisling has found that instead of a solution of bichromate a solution of erythosin can be used for sensitizing gelatine or gum. A paper sensitized with the erythosin has the advantage of keeping in good condition for six months or more. The process is worked in the usual way, the sensitizing solution being a 1 in 10,000 solution of the dye.

**New Platinotype Paper**

135

B. J., 1917, p. 60

At the Croydon Camera Club, Mr. W. H. Smith, manager of the Platinotype Company, demonstrated a new printing paper which gives warm sepias by cold development, resembling Sepia Japine Platinotype.

**Developer Standards**

1531 ✓

Studio Light, Feb. 1917, p. 16

An article describing the various tests carried out in the Research Laboratory in order to determine the desirability of any particular developing agent.

**Palladium Salts as Toning Agents**

1565

B. J., 1917, p. 80

In consequence of the scarcity of platinum, E. Valenta has used potassium chloro-palladinite for toning silver prints in combination with sodium glycollate.

**Color Sensitizing Dyes**

1581 ✓

B. J. Color Supplement, 1917, p. 8

According to reprints from the *Photographische Korrespondenz*, Dr. Koenig has produced several new dyes recently. Of these pinachrome blue and pinachrome violet are known to us but pinacyanol green and dicyanine A are new. Dicyanine A is considered to be more suitable as a sensitizer for the infra red than dicyanine.

**Ferro-Prussiate Sensitizers**

162/71

B. J., 1917, p. 70

E. Valenta finds that ferro-prussiate paper can be improved by the use of a small quantity of diglycollato-ferrate of ammonium, this giving a somewhat quicker printing paper and yielding a finer color of image.

## Croydon Camera Club

241

B. J., 1917, p. 86

Mr. W. H. Smith demonstrated a small printing cabinet using a 100 watt nitrogen tungsten lamp with which he found it possible to print out silver paper.

## Green Safelights for Dark Room Work

C. deAlbouret

2555

Il Corriere Fotografico, p. 3055

General exposition of the advantages of green light over red.

## Shutter Speeds

2623

B. J., 1917, p. 53

Attention is called to the importance of possible variations in the speed of a shutter. It is stated that very often a shutter set to a slow speed will open slowly and fail to close properly the first time after a rest. A reasonable degree of consistency is considered to be of greater importance than anything else.

## The Relation Between Rapidity and View-Angle

263

B. J., 1917, p. 67

The author calls attention to the effect which the cutting of the aperture of the lens when working at wide angles has upon its rapidity. The effect is much greater than is usually realized, for instance, with a five-inch Goerz Dagor at full aperture a  $3\frac{1}{4} \times 4\frac{1}{4}$  plate receives at the corners only one-third of the light that reaches it in the center and since the exposure must be regulated for the least lighted part of the picture, it is clear that the lens used at a wide angle is considerably slower than the same lens used to cover a smaller field.

## A Retouching Knife

E. Hinge

275

B. J., 1917, p. 85

A knife can be made by fitting a fine watch-spring in place of the lead in a retouching pencil holder.

## Motion Picture Camera Specifications

31

Mot. Pict. World, 1917, p. 839

In this and in a series of preceding articles, the desirable features of various motion picture cameras are indicated.

## The Simplex Precision Motion Picture Camera

31

Mot. Pict. World, 1917, p. 1770

A new camera model with several desirable features.

## A Dissolving Attachment for use with the Universal Camera

3107

Mot. Pict. News, 1917, p. 1112

The dissolving or "fading out" effect is secured by means of a rotating graded glass disk placed in front of the lens. The apparatus is independent of the working mechanism of the camera, and is so arranged that by pressure of a button the glass disk is rotated through one revolution in 5 seconds.

Model Lighting System in the Rothacker Studio J. H. Sandidge 374

Mot. Pict. News, 1917, p. 1274

Sets of Cooper-Hewitt tubes are supported on a traveling crane, which may be moved to any desired position in the studio, while each individual set of tubes may be raised or lowered, or inclined at any angle. All cables are suspended above the lights, which are operated from a small switch panel near the camera operator, which constitutes part of the moveable outfit so that the services of an operating electrician may be dispensed with.

Royal Photographic Society B. J., 1917, p. 86

In the annual meeting of the Royal Photographic Society the officers and council were elected, Mr. S. H. Wratten becoming a member of the latter.

The Adaptation of the Eye to Variations of the Illumination P. G. Nutting

Il Corriere Fotografico, 1917, p. 3046

Communication from the Research Laboratory of the Eastman Kodak Company.

Il Corriere Fotografico January and February, 1917

This Italian journal contains a number of advertisements of English and American firms. The advertisements of developing agents show that there has been a shortage of these in Italy, though apparently pyrogallol and hydrochinon are now being manufactured in the country.

## Photo-Engraving

New Color Plate Process K07332  
Amer. Printer, Feb. 20th, 1917, p. 57

A note on the method introduced by E. H. Gamble for selectively projecting colored light on the original copy while it is being photographed in order to minimize re-etching.

Wet Plate Negatives Unequal in Thickness S. H. Horgan 041/63  
Inland Printer, 1917, p. 773

A relief effect, sometimes called "dry effect", apparently caused by excessive reduction and intensification.

The Art of Making Engravings for Medallions R. F. Salade 07  
Inland Printer, 1917, p. 776

Describes the process of production.

- Experiments in the Half-Tone Process      A. J. Bull and E. L. Turner      07

Phot. J., 1917, p. 8

An important paper read before the R. P. S. giving the results of a preliminary series of experiments, summarized as follows: 1. The gradations secured by the use of round or square stops are practically identical; 2. Wet collodion plates and gelatine dry plates yield different gradations; 3. The differences produced by the various systems of stops for negative making are smaller than is often believed; 4. The type of dot formation and rendering of gradation do not alter with changes in size of image (magnification) provided that the aperture ratio is kept constant.

- The Development of Rotary Photogravure      0713  
Inland Printer, 1917, p. 775

A report of a talk by the manager of the rotary gravure department of the American Lithographic Company, states that their present presses deliver sheets 38" x 50" printed on both sides at a rate of 4,800 per hour.

- English Pound Notes Printed by Photogravure      0713  
Inland Printer, 1917, pp. 772, 773

Waterlow Brow. & Layton are using a machine photogravure process to print the new treasury notes in many colors. They are said to be non-counterfeitable by photography.

- How to make Photographs for Half-Tone Reproductions      07331

Amer. Printer, March 5th, 1917, p. 85

Good advice to catalogue producers by Gatchel & Manning, engravers of Philadelphia.

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## Physics

- Physical Investigation Work in X-Ray Tubes and Accessories      W. D. Coolidge

Amer. Journal of Roentgenology, 1917, p. 56

The writer reviews the present status of the manufacture of Coolidge X-ray tubes; he also describes a tentative all-metal tube which will have in addition to the advantages of compactness and of adaptability to close range work the added factor of perfect absorption of useless radiation. The tube would be a great advance in X-ray science.

- Measurements in Frictional Electricity      N. R. French  
Phys. Rev., 1917, p. 151

The author has investigated the relationship of electrostatic charge to the absolute humidity of the surrounding air; he has found that this charge decreases with increasing humidity for the same amount of excitation; the theory is discussed. He has also found that the rate of discharge is dependent on the mixture ratio of air and water vapor of the surrounding medium.

## Photochemistry

### Electrochemical Analogies of Photochemistry

W. R. Mott

Phys. Rev., 1917, p. 89

Mott considers that the Grotthus electrochemical analogy can be made more concrete and of prognostic value if the photochemical analogues of *current* and *voltage* be taken as *intensity* and *frequency*, and that high frequency of vibration of light plays the same role as decomposition voltage in electrolysis. (This analogy has already been indicated, as a consequence or expression of the principle of photochemical accommodation, e. g., in phototropic substances. See Sheppard, "Photochemistry" p. 246, p. 339. Light intensity is more precisely analogous, as flux density, to *current density* in electrolysis).

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## General and Inorganic Chemistry

### Nickel Plating

Met. Chem. Eng., 1917, p. 284

A patented process, 1,211,218, Jan. 2, 1917, which permits of direct plating on steel and the use of a much higher voltage than can be ordinarily employed without danger of burning. It consists in treating the article in a hot solution containing 3 lbs. of manganese dioxide and half a gallon of phosphoric acid in 100 gallons of water.

### Making Metal Rust-proof

Brass World, 1917, p. 44

Process patented by W. H. Allen of Detroit. Consists in immersing iron from 1 to 3 hours in a nearly boiling bath of manganese phosphate dissolved in phosphoric acid and diluted to an acidity of about 0.1%.

### Blackening Metals

B. J., 1917, p. 69

Various methods of blackening metals have been published in the German journals since the beginning of the war.

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## Analytical Chemistry

### A Method for the Detection of Calcium in the Presence of Strontium and Barium.

P. N. Raikow

J. Chem. Soc. Abst., 1916, ii, 646

Advantage is taken of the fact that of the alkali earth carbonates, only calcium carbonate is decomposed in an open porcelain dish heated with a Teclu burner. The resulting lime is detected by phenolphthalein.

**A Colorimetric Method for the Estimation of Acetylene**

A. Schulze

J. Chem. Soc. Abst., 1916, ii, 649

Acetylene may be estimated by the red color produced in ammoniacal cuprous solutions, containing a little gelatine. In a gaseous mixture, as little as 0.001 cc. of acetylene can be detected.

**Characteristic Reactions of Perchlorates, Periodates, Persulphates, Percarbonates and Perborates**

A. Monnier

Chem. Abst., 1917, p. 426

**Precision in Chemical Weighing**

W. N. Rae and J. Reilly

Chem. News, 1916, pp. 187, 200

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## Colloid Chemistry

**The Effect of Centrifugal Force on Colloidal Solutions**

E. E. Ayres

Met. Chem. Eng., 1917, p. 190

The author first reviews the work of Perrin and others on the distribution of colloid or suspended particles in a liquid under a uniform force, e. g., gravitation, which gives a law expressing the subsidence (or separation) as a function of the particle size and density. Perrin's distribution formula is then applied to separation of suspended particles by centrifugal force, and an analogous expression obtained in which the "gravitational modulus"  $a = mgk$ , where  $k$  is a constant equal to Avogadro constant divided by  $RT$  (gas const.  $\times$  abs. temp.).  $g$  = gravitational constant,  $m$  = mass = volume times absolute density, is replaced by a "centrifugal modulus"  $b = m\kappa f_0 g$ , where the symbols retain their meaning but  $f_0$  = revolutions per minute. It is shown that separation is good when  $b = 10$  and practically perfect when  $b = 100$ . A further calculation is given to obtain the *time* necessary for adjustment of centrifugal equilibrium in a suspension, hence, for a possible separation. Practically, the advantages of a continuous centrifuge over the non-continuous are emphasized. The Sharples centrifuge, exerting a force 40,000 times gravity, is capable of removing particles at the lower ultra-microscopic limit from water in thirty-three hours.

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## Organic Chemistry

**The Manufacture of Picric Acid from the Medical Standpoint**

F.O. West

J. Ind. Eng. Chem., 1917, p. 303

An article by the resident surgeon on a chemical plant, describing the treatment of nitric acid "fume" poisoning cases. For all cases—even the mildest indications—a lungmotor aspirating oxygen or air containing small quantities of ammonia is employed. Treatment for acid burns and their prevention are also mentioned.

## New Paper-making Materials

J. Ind. Eng. Chem., 1917, p. 320

Spinach stems contain 46 per cent of cellulose, and are stated to yield paper of good quality. It is also stated that the grass named "Lalang," occurring on the coast of Malaga, shows similar possibilities.

## Direct Iodination

R. L. Datta, with N. R. Chatterjee and N. Prosad  
J. Amer. Chem. Soc., 1917, pp. 435, 441

Benzene and its homologues yield iodo derivatives on treatment with iodine and nitric acid. A 75-80% yield of iodobenzene is obtainable from benzene; with increasing substitution the yield falls off.

Phenolic and acetylenic compounds can be iodinated by means of nitrogen iodide (or a mixture of iodine and ammonia); with certain other substances oxidation or the formation of iodoform takes place.

## The Ethyl-Sulphuric Acid Reaction

P. N. Evans and J. M. Alberton  
J. Amer. Chem. Soc., 1917, p. 456

Absolute alcohol and 95% sulphuric acid, when mixed in equimolecular proportions, attain an equilibrium of nearly 60% of complete reaction at temperatures between 20° and 100° C. Equilibrium is reached in somewhat over two hours at 20°, and in under five minutes at 100°. Above 70° the velocities of secondary reactions, chiefly the formation of ether, become appreciable. It is surmised that a small proportion of ethyl sulphate is formed on prolonged standing in the cold, but no direct evidence on this point is brought forward.

## "Nitron" in Analysis of Explosives

W. C. Cope and T. Barab  
J. Amer. Chem. Soc., 1917, p. 504

A review of the advantages and limitations of this reagent for the determination of nitrates. Directions are given for the estimation of the nitrogen in nitrocellulose, nitrostarch, nitromannitol and nitroglycerine. It is necessary to conduct the alkaline hydrolysis in the presence of excess of hydrogen peroxide. Picric and perchloric acids may likewise be estimated by means of their insoluble "nitron" salts.

## Management of the Beater Room

A. B. Green  
Paper, Feb. 14th, 1917, p. 19

A scientific study of changes in the beater so that "the management can give to the beater man and his helpers definite duties to perform, which can be understood and measured by a competent person not himself doing the work, the result of which will be greater uniformity in the treatment of the stock." The study was made in the open tub beater of the Hollander type with single roll and bed plate, the roll being driven at constant speed. Chemical wood and rag stock were used. Care was taken that the same kind of stock and the same amount of stock and water were used and that the roll was maintained in the same position. Under these conditions the following six variables were studied: (1) The surface slope. This is measured from end to end of the midfeather on the open side and from end of the midfeather to curb covering roll. (2) The texture. This is the appearance of the mass, the change from lumps and fissures to a smooth pulp. (3) Speed. Time of travel from back fall around to roll. (4) The working of the stock in itself. (5) The "feel." (6) The "flow." This is measured by a dray. The paper gives the methods of studying these variables, with charts and tables of results obtained.

## Patent Abstracts

### U. S. Patents

1217027

L. Lilienfeld B124 1514

A Film Base containing cellulose ethyl ether made supple by the addition of tricresylphosphate.

1217391

C. N. Bennett K31 K/23

A Process of Multi-Color Motion Picture Photography. When applied to three-color work, if successive picture spaces on the film be numbered 1, 2, 3, and so on, the first set of negatives will be on spaces 1, 5, 9; the second set will be on 4, 8, 12; the third set on spaces 7, 11, 15, etc. The taking apparatus includes spaced lenses or equivalent optical means for forming the three images suitably spaced apart.

1216493

C. Raleigh and W.V.D. Kelley, Assigned to Prizma Inc. K/24

A Motion Picture Color Photography Film. Each exposure is made through an appropriate color filter plus a small amount of white light so that each negative will correspond to a particular color sensation plus a faint white light impression.

1217425

C. Raleigh and W.V.D. Kelley, Assigned to Prizma Inc. K/24

A Process for Producing Multicolor Motion Pictures. The successive color sensation negatives are made through a set of color screens provided with adjustable apertures which permit the passage of small amounts of white light; consequently each picture represents a combination of colored light and white light. This is the process patent corresponding to product patent No. 1216493.

1216695

R. John 063

A Method of Making Motion Pictures which show an artist drawing a picture or cartoon upon an easel. A photographic enlargement is bleached so as to be invisible to the camera but visible to the eye. The artist traces over the lines of the image to render them visible while motion pictures are taken of him.

1216026

H. W. Webb 064

A Method of Producing Opaque Motion Picture Strips bearing pictures on opposite sides which are adapted to be projected by reflected light instead of the customary transmitted light. An ordinary motion picture negative is cut up into sections which are placed side by side so that the first picture of each row is the successor of the last picture on the preceding row. A mechanical printing plate is produced from such negative and sheets of paper printed therefrom. The sheets are folded into cylindrical form and the overlapping transverse edges are pasted together, so that the pictures will run on the cylinder in succession in a helical line. By cutting along the helical line the final picture band is obtained.

1216318

Wm. C. Huebner 07005

Photographic Printing Apparatus, for photo-mechanical work, which is portable, so that a sensitized plate can be fastened in and afterwards carried to the printing frame proper and adjusted in position on the negative.

1217722

H. Dreyfus 1513

A Process of treating cellulose acetate which is insoluble in chloroform so that it becomes soluble in either chloroform, alcohol-chloroform, acetone, alcohol-benzene, or dilute alcohol. It is said to be especially good for films.

1217028

L. Lilienfeld 1514

An Artificial Silk Filament composed of cellulose ethyl ether in admixture with an ester of a phenol.

1216581

W. G. Lindsay, Assigned to The Celluloid Co. 1613 B122

A Process of Making a Plastic Acetyl-Cellulose Compound which consists in mixing tetrachlorethylacetanilide and ethyl alcohol with an acetone-soluble cellulose acetate and heating.

1213135

E. E. Underwood and F. H. Reynolds, 215  
Assigned to E. K. Co.

A Folding Roll Film Camera, the body of which has integral film chambers at both ends. Between the chambers, and closing the inner sides thereof, is a rectangular detachable frame carrying the bellows, bed, track, and lens front. The camera is loaded by removing the frame with its attached parts, thus opening up the film chambers for the insertion of the spools.

1216543

C. Bornmann and E. C. Clark, Assigned to Ansco Co. 215

A Roll Film Photographic Camera provided with a quick winding mechanism for rapidly bringing successive portions of the film into the exposing position. The winding shaft is driven by a spring motor controlled through a chain of gearing and an escapement. An indicator for showing the number of exposures that have been made is adjustably connected with the shaft of the winding roll, so that it will indicate correctly the number of exposures whether the winding shaft be turned by the motor or by hand.

1216631

C. Voigt 215

A Circular Scale adapted to be attached to the side of a roll film camera concentric with the winding key. By providing very accurately positioned marks on the scale it is possible to utilize for picture purposes the spaces on a roll of film which are generally left between pictures to allow for inaccuracies in winding.

1217444

A. Hardy 215

A Roll Film Camera provided with a special winding device which indicates by means of an audible signal when the right amount of film has been wound into position. When the film is wound up, a spring upon the shaft carrying the unwinding roller is put under tension. By releasing certain catches this spring may be utilized to wind back sections of the film.

1217653

C. F. Speidel, Assigned to E. K. Co. 2153

A Roll Film Camera the back of which is provided with an opening through which characters may be written upon a film provided with carbon paper, etc. The opening in the camera back is closed by a pivoted door carried upon a longitudinally movable slide. When the slide is moved to release the door and uncover the opening, a clamp for the film is automatically cammed into position.

1216440 J. S. Greene, Assigned to Commercial Camera Co. 2172

A Commercial Copying Camera of the type that uses a continuous web of sensitized paper, which after exposure is severed, and the severed section developed in the rear part of the apparatus. The exposed section of paper is partially fed into a horizontal developing tank by a pair of rolls and is brought to a central position in the tank by means of flexible paddles or arms mounted on transverse rotary shafts in the cover of the tank. A tray is provided for lifting the developed print out of the tank for transfer to the fixing bath. The paddles not only feed the paper and keep it submerged in the developer but suitably agitate the latter.

1218273 A. Kiss, Assigned one-half to M. Ruzs, Cincinnati, Ohio 2193

A tintype camera in which a pack of sensitive cards is pressed forward in a magazine toward the focal plane. A combined shutter and feed slide when moved in one direction exposes the foremost card, and when moved in the other direction pushes the exposed card into a slot from whence it drops into a developing tank.

1215412 W. A. Riddell, Assigned to E. K. Co. 2101

A Folding Bed for Roll Film Cameras. It is provided with a sliding hinge which permits the use of a relatively long bed in proportion to the general dimensions of the camera and consequently a greater focusing range is obtained. The hinge arrangement also permits the lens carriage to be easily transferred from the track on the bed to the other track in the bellows chamber, the two tracks being practically continuous.

1217728 W. Ehrlich 2106

A Focusing Hood for ordinary plate cameras. It consists of a triangular, foldable pocket fastened in the rear of the ground glass and containing an inclined mirror in which the operator sees the image formed on the ground glass right side up.

1218113 W. L. Patterson, Assigned to Bausch & Lomb Optical Co. 221

A Projection Apparatus adapted to throw images of either transparent or opaque objects. The main casing is provided on its front wall with an optical system for transparent projection, and on its upper wall with an optical system for opaque projection. A lamp house and condenser are pivoted to the rear of the casing, so that in one position they co-operate for projecting lantern slides and in the other position for the projection of opaque objects. The connection between the casing and lamp house is light trapped.

1215694 J. M. Osborne 2235

A Projecting Machine for automatically displaying in succession a series of lantern slides for advertising purposes. The lantern slides are mounted in two groups, one above and one below the projecting part of the machine. The front slide in the upper group is pulled down into projecting position, while the rear slide of the lower group is transferred to the upper group so as to keep the number of slides in each group the same.

1215975 G. L. W. Palmer 2235

A Projecting Apparatus for automatically displaying a succession of lantern slides for advertising purposes. The slides are mounted upon a set of parallel rotary discs which are intermittently rotated to bring the slides into displaying position, the projecting light being automatically extinguished while changing from one slide to the next. The discs are provided with holes so as not to obstruct the light when the slides on other discs are being shown.

1216948 L. J. E. Colardeau and J. Richard 227

An Apparatus for successively viewing a series of small stereoscopic transparencies. Instead of completely cutting off the light while changing from one transparency to another, a translucent shutter is employed to minimize eye-strain.

1217026 G. A. Ley 231

An Electrical Ignition Apparatus for flashlights provided with a testing circuit which includes a small incandescent lamp. The resistance of this test circuit is high enough to prevent the flow of sufficient current to ignite the powder; yet it permits the lamp to glow when the parts of the apparatus are in proper adjustment.

1216696 R. John, Assigned to Inconochrome Co. of America, Inc. 2322

An Illuminant for Photography, especially when using panchromatic plates. It consists of a bank of nitrogen-tungsten lamps provided with reflectors which are colored so as to reflect controlled amounts of red and yellow rays. The object is to provide a light having the blue, green, yellow and red rays in proportions corresponding to the sensitiveness of the panchromatic plates, so that orthochromatic rendering may be obtained without the use of filters.

1217005 E. Johnson, Assigned one-half to J. D. McCarthy 242

A Photographic Printing Frame comprising upper and lower hinged sections. The lower section is provided with a countersunk glass plate and the upper section contains the usual presser back.

1216748 P. M. Taylor 251

A Water Bath Heater for maintaining photographic toning baths at the proper temperature.

1214700 P. J. Marks, Assigned to E. K. Co. 2626

A Cable Release for Studio Shutters having a catch member for holding the shutter in open position.

1216021 G. T. Twinting 2626

A Shutter Actuating Device comprising a lever and link arrangement adapted to be operated from a distance by pulling a thread, so that the operator may include himself in the picture.

1217493 H. N. Parsons 2626

Another Clock-Work Mechanism for operating a shutter release after a predetermined interval to permit the operator to include himself in the picture.

1215647

R. E. Green 2671

A Range Finder mounted on the side of a camera. It is of the type wherein the observer sights at the feet of a person to be photographed and a gravity actuated pointer moves across a scale to indicate approximately the distance to said person.

1215170

C. W. Laurell, Assigned one-half to J. C. Strauss 283 N1

A Process of Mounting Photographs. The photograph is trimmed to accurately fit in bordering pieces, which in turn fit within a marginal piece. The print and these pieces are then mounted upon a single large backing piece. Such an arrangement is said to be cheaper than the ordinary method of tinting a wide integral margin around the print, because said integral margin is made from the relatively expensive sensitized paper. The product is also more compact than some of the multiple mounts now in use.

1215534

A. S. Howell, Assigned to Bell &amp; Howell Co. 3104

A Film-Magazine for Motion Picture Cameras. The film passes from the magazine to the camera and from the camera into the receiving end of the magazine through openings lined with velvet. These openings are provided with spring-pressed closures which automatically shut whenever the side door of the main camera is open.

1216835

L. G. Morris 320

A Projection Apparatus in which the intensely bluish rays of the projection arc are modified by reflection from a gold or copper mirror so as to provide a "golden mellow" tone.

1214786

H. M. Hill, 3201

Assigned to Educational Motion Picture Machine Film Co.

A Worm Gearing for intermittently actuating the feed mechanism of a motion picture machine. The feature of the device is the particular shape of the gear teeth.

1215887

A. D. Standeford 3203

A Shutter for Motion Picture Machines, two of the three segments of which are adjustable in width to minimize flicker. These adjustable sectors are composed of overlapping leaves which may be relatively adjusted while the machine is in operation by means of sliding collars carrying inclined slots.

1215066

R. Shipman 3208

A Rewinding Device for Motion Picture Film. It is geared up to wind rapidly and has a device which facilitates attachment and removal of the reels.

1215364

J. F. Gilmore 3208

A Rewinding Device for Motion Picture Machines. A pair of vertical reels are located in the upper chamber of the machine and a second pair in the lower chamber. The film to be exhibited passes from one of the upper reels to one of the lower reels, while an exhibited film, which is to be rewound, passes from the other lower reel to the other upper reel. The gearing is such that the driving mechanism for operating the machine also operates the rewinding reels.

1216967 J. R. Dunavant 3208

A Clasp for attaching the end of a motion picture film to the hub of a winding reel. The clasp is made of spring wire in such a way that injury to the film is unlikely and is conveniently operated from the outside of the reel.

1217598 W. Heinze 3208

A Rewinding Device for motion picture films adapted to be driven in unison with the mechanism of the motion picture projector. The reel bearing the film to be re-wound is mounted upon the same shaft as the receiving reel of the projecting apparatus and the reel on which the film is rewound is mounted on a shaft driven by a crossed belt from the first named shaft.

1215770 G. D. Brady 3209

A Motion Picture Machine provided with a safety device which automatically puts out the light and stops the motor whenever the film breaks off or becomes slack. A crank arm carries a roller which bears against the film and turns abnormally when the film breaks. Such abnormal turning sets the safety device in operation.

1216154 E. G. Meadway, 324  
Assigned to The British Patent Surbrite Co., Ltd.

A Screen for Motion Pictures. It consists of a fabric coated with a mixture of nickel powder, naphthalene crystals and rubber solution.

1216380 J. F. R. Troeger 324

An Exhibition Screen for Projection Work which is translucent so that the pictures thereon may be viewed by the spectators from the side opposite the projecting lantern. It consists of a sheet of translucent fiber embeded in flexible translucent fire-proof material of a gelatinous nature, the surface of which is provided with corrugations.

1217979 J. R. Millward 328

An Advertising Projection Apparatus for Displaying Motion Pictures. An endless film is used, the views on which show a complete phase of movement, such as the breaking of a wave: consequently, the repeated use of the film gives the effect of a series of waves.

1218342 M. J. Vinik 364

A Finder for Motion Picture Cameras. It consists substantially of a semicircular rotating mirror inclined at 45° to the axis of the lens and located between the lens and the film. It intermittently throws an image on to a co-operating ground glass which is at the same optical distance as the film from the lens.

## British Patents

B14526-15                      A. G. Henderson, A. Gilmour, W. Andrews                      2235

Optical Projection Apparatus. The apparatus described in Specification 28, 172/13 for the production of moving pictures for advertising and other purposes is modified so that a stationary image is projected on a screen, another image is slowly advanced on to and reciprocated on the screen, and a third image is suddenly projected on the screen and suddenly and simultaneously withdrawn with the second image.

B14620-15                      J. N. Stern                      227-043

Stereoscopic Apparatus. Two stereoscopic negatives in proper position, or the same negative in two different positions, are actinically printed on to a plane surface to be serrated subsequently or on to a serrated surface, each cell of the serrations being bounded by sides which are radial to one or the other of the assigned positions for vision, so that to each eye there are presented only the appropriate parts of the picture surface.

B102739                      H. Guggenbuhl                      2626

Shutter Operator. A shutter release operated by means of a fuse.

B100699                      O. Hoel                      2652

Auxiliary Plate Storage Box with Changing Attachment. A plate storage magazine made so that the plates can be transferred to the plate holders without a dark room.

B102872                      G. L. Harvey                      2681

Exposure Meter. Relates to exposure meters of the type in which a movable chart card is used in conjunction with another member having suitable index marks and data for light conditions, exposure times, etc.

B102929                      J. M. F. Pons                      2833

Relates to apparatus for imparting animated effects to photographs by means of a superposed relatively movable line screen, and comprises constructions of such apparatus in which the effects are produced by a rubbing action between the thumb and finger holding the apparatus. A card on which the photograph is mounted is provided with long slots, and the card carrying the screen has tongues which are a little shorter than the slots and are passed through them and folded over at the back of the card.

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## Italian Patents

458/218-1916                      L. A. Pineschi and S. V. Santon                      K/23      K/24

A Method for Taking Color Picture Projections with Two-color Screen.

456/137-1916                      G. Battistini                      K/42

A Process for Natural Color Photography on Paper.

- 459/125 Ferreté 034-2651  
Improvement on Plate Holders for Cameras.
- 459/124-1916 Ferreté 034  
A Device for Producing Moving Portraits.
- 457/231-1916 J. Ferriter and P. Thomas 045  
Improvement on Transparent Plates and Process of Manufacture.
- 451/217-1915 H. B. Stocks 069  
Apparatus for the Reproduction of Sounds by Photography.
- 461/168 T. W. Hutchins 1533  
Improvement on Process for the Production of Sodium Bisulphite.
- 461/149-1916 C. Grosso 2106  
A Frame for Ground Glass Focusing Screen.
- 461/227 A. Sandrins 2108  
Multiple Camera.
- 460/39-1916 A. De Girolami 24  
Apparatus for Photographic Prints on Bromide Paper.
- 456/201-1916 D. Saville 24 048  
A Method and Apparatus for Taking Exaggerated and Deformed Pictures.
- 460/54 F. Rochester 3203  
A Shutter Device for Cinematograph Taking Camera.
- 450/160-1915 E. H. Riegel 386  
Improvement on Apparatus for Joining Photographic and Cinematographic Films.

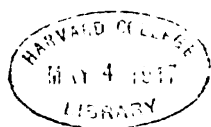


Monthly  
**ABSTRACT**  
Bulletin



May, 1917

Issued by the Research Laboratory  
**EASTMAN KODAK COMPANY**  
Rochester, New York



*in company*

# Monthly Abstract Bulletin

Vd. 3, No. 3

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May, 1917



## Photography

- The Removal of Hypo by Washing with Water** A. V. Elsdén G7  
 Phot. J., 1917, p. 90

The author assumes that the hypo remaining in a plate after a given amount of washing will, if the plate is placed in a fresh quantity of water, distribute itself equally throughout the whole quantity of water, and proceeds to test the conclusions from this experimentally. He finds (1) the rate of removal of hypo from thin gelatine films by washing with water follows the rule which he has assumed; namely, that the hypo is distributed evenly between the gelatine and the water; (2) retention of hypo in the case of a thin gelatine film by adsorption is very small; (3) plates can be washed free of hypo for all practical purposes by four successive washings of two minutes each with comparatively small volumes of water with intervening draining. The author's conclusions would seem to show that it is very easy to wash a completely fixed plate or film free from hypo in a short time. It must be noted, however, that he used two fixing baths, so that any silver carried over from the first bath would be removed in the second bath. It was thus not necessary to remove silver in the washing, only the hypo being left in the film after fixing.

- The Washing of Plates** G7  
 B. J., 1917, p. 119

Article commenting on Mr. A. V. Elsdén's paper abstracted in this issue of the *Bulletin*.

- Pinholes with Mercury Intensifier** L. T. W. H2  
 B. J., 1917, p. 155

To avoid pinholes the author uses his mercury and ammonia solutions half the usual strength, rubs the film lightly with cotton while bleaching, washes as usual, and then places in the ammonia to blacken, being very careful not to touch the film either with cotton or the fingers during blackening or washing until the negative is dry, as he finds that touching the film at this stage produces pinholes.

- A Method of Developing and Toning Positives Simultaneously** J87  
 Mot. Pict. News, April, 1917, p. 2216

An article drawing attention to the method of toning motion picture film during development by adding to the developer substances which become coupled with the oxidation products of the developer forming insoluble and colored deposits along with the silver image. This method of toning film has been investigated in the Research Laboratory, but owing to the uncertainty of the results obtained and the instability of the substances involved, it is doubtful if this method will have any immediate technical application to the production of positive film.

- Colour Vision and Colour Photography** C. Welborne Piper K01  
 B. J. Color Supplement, March, 1917, p. 9

A discussion of the spectrum and the Young-Helmholtz theory.

- Decennia Practica** K21  
 B. J. Color Supplement, March, 1917, p. 11

This installment concludes the series of abstracts on exposure with one-exposure three-color cameras and with other devices, such as the "Ives Tripak", for securing the three-color sensation negatives at one exposure.

## Color Prints on Opal

Le Mée K/42

Phot. J. Amer., 1917, p. 154

Opal coated with bromide emulsion gives the blue filter image and is "toned" to lead chromate. The red and green filter images are printed as pinatypes on glass one on top of the other. The opal and the glass images are then bound together in register and viewed by reflected light.

## The Influence of Time on the Latent Image

H. J. Channon 014

Phot. J., 1917, p. 72

The author has investigated over long periods of time the keeping power of exposed plates. His most striking experiment consisted of thirteen Ilford Ordinary plates exposed in 1894, developed at intervals first of two years and then of four years, a regular decrease of density as the time of storage increased being obtained until at the end of twenty years quite a thin image appears in place of the vigorous and dense one of 1894; nevertheless, this plate developed twenty years after exposure shows a respectable negative which will still give a fair if somewhat flat print. The loss of image appears to decrease as time goes on, the loss in the last twelve years being very small, and it appears as if the image would have had many years to run. Different plates are found to differ very greatly in their behavior.

The author refers to a paper by J. Barker (British Journal Almanac, 1904, p.749), who divided a quantity of plain bromide gelatine emulsion into five parts, added certain salts to four of them, coated plates with all the varieties, gave equal exposures, stored them, and developed them eight years later. The plain emulsion plate developed perfectly; one containing one grain of potassium iodide to the ounce had the latent image practically destroyed, but effects also followed from the addition of one grain per ounce of potassium bromide or of ammonium chloride. It was found that bromides obliterated the detail in all but the strongly lighted parts and chlorides disintegrated the gelatine and obliterated the finer details of the latent image.

The author deduces from this work of J. Barker's that the retention of the latent image may depend very much on the presence of traces of salts in the emulsion. He considers the following results to be established from his work: (A) Loss of the latent image occurs when plates are kept, but the extent of the loss varies according to the make of the plate; it is most apparent in a weakening of the greater densities; (B) Plates kept for a very long time show the development of fog during storage. Dark edges also appear, especially on the uncut edges of the plates; (C) With the appearance of general fog there is generally an increase of the lowest densities, sometimes showing distinct images of impressions which would be invisible if developed shortly after exposure. The author has made a number of experiments on the conditions under which the plates were kept; his results, however, do not lend themselves to summary. The whole paper should be read by those interested in the subject.

## Prevention of Fogging of Photographic Plates

Lüppo-Cramer 014-041

J. Soc. Chem. Ind., 1917, p. 306

The fogging action of terpenes, resins, papers, woods, etc., due to the formation of hydrogen peroxide, can be prevented by interposing a layer of finely-divided manganese peroxide, such as a sheet of paper soaked in permanganate solution and dried. Manganese peroxide has already been used for this purpose in the Laboratory.

## Plate Speeds

O. Bloch 015

Phot. J., 1917, p. 51

The author undertook this work to determine the speeds of different types of emulsion to different developers in order to find whether the developer had an effect upon the speed obtained. Owing to the use of an intensity scale consisting of a graduated wedge, he found that some plates show great divergencies in apparent speed according to the intensity of the light, this being due to the effect known as failure of the "reciprocity" law. It is interesting to note that he finds no selective absorption in his transparent wedge. (This is probably due to the color of the light used for exposure—metallic filament lamp—since neutral tint wedges usually show strong selective absorption in the extreme violet and ultra violet.)

The method of exposure finally selected was to use a sector wheel driven at very low speed so that the exposure was made with a single revolution of the wheel. The effect of retrogression due to bromide was investigated for the developers used. Wide differences were found between the different types of plates; on the whole, the effect of different developers upon the H. & D. speed was small, hydroquinone and glycin giving low speeds and ortol high speeds, especially with one special plate.

## New Ceramic Effect

047

B. J., 1917, p. 139

At the Croydon Camera Club, Mr. A. C. Braham of the Autotype Company, introduced a novelty in the shape of a plaque made as follows: A carbon print made with a vignette is developed on the concave side of a slightly convex oval glass which is then backed up with white dental plaster, forming a paste which sets hard. The result closely resembles a ceramic.

## Using the Correct Color Filters

056

Abel's Phot. Week. 1917, p. 226

(As taught by the Eastman School.)

## Cinematographic Bibliography

06

Mot. Pict. News, 1917, p. 2216

A review of works on cinematography omitted in the bibliography given in the Mot. Pict. News of Dec. 23, 1916, p. 4062.

## Change in Speed of Eastman Negative Film

0632

Mot. Pict. News, 1917, p. 2054

A note drawing attention to the fact that the speed of Eastman motion picture negative film above emulsion No. 6200 has been materially increased, and that the time of development should be increased accordingly in order to obtain the usual contrast. It is stated that the new film takes a somewhat longer time to fix than the old batches.

## Kodura Extra Slow Gaslight Papers

136

B. J., 1917, p. 111

Three grades of extra slow Kodura have been put on the market by Kodak Ltd.

- Negatives by Use of Transferotype Paper V. E. Beynon 1375  
 Amat. Phot., 1917, March 12, Supplement, p. 2

The writer tells how he made excellent negatives in the camera and transferred these to glass.

- Flashlight 1592  
 B. J., 1917, p. 105

An Ex-Cathedra note points out that a mixed flash powder may deteriorate on keeping.

- Developers for Negatives—Pyro with Metol L. T. Woods 163  
 Substitutes—Diamidophenol  
 B. J., 1917, p. 148

The author has tried combinations of various British substitutes for metol with pyro and gives formulæ. He also gives formulæ for the use of diamidophenol, which he finds to be a satisfactory negative developer.

- Mercury-Intensified Negatives 1651-H2  
 B. J., 1917, 117

The impermanency of such negatives is discussed.

- A Note on the Hypochlorite A. H. Nietz and K. Huse 1656  
 Reducer  
 B. J., 1917, p. 143

A note from the Research Laboratory. The authors find that the hypochlorite reducer is very similar in behavior to Deck's persulphate-permanganate; that is, it forms a nearly proportional reducer, though its action is somewhat more vigorous on the lower densities.

- Non-Cockling Glue Mountant H. Baker 1697  
 B. J., 1917, p. 115

H. Baker gives a method of making up such a mountant.

- Non-Cockling Glue Mountants 1697  
 B. J., 1917, p. 127

Correspondence on this subject by W. E. Debenham and W. M.

- A Shutter Testing Machine A. H. Hitchings and F. B. Gilbert 262  
 Phot. J., 1917, p. 64

The authors test the speed of shutters by placing the shutter in front of a narrow slit on which an image is thrown by a lens on a drum rotated by a high-speed motor with a tachometer attached, and in front of the drum is rotated a slotted wheel which serves to divide the image of the shutter up into equal time intervals. The instrument gives an indication of efficiency but does not show the actual way in which the shutter opens.

M. Edouard Lumière, a younger brother of MM. A. and L. Lumière, has been killed while on active aviation service with the French army.

B. J., 1917, p. 110

Kodak's Professional Showrooms

B. J., 1917, p. 110

Kodak Ltd. have moved their professional showrooms to the ground floor of their premises in Kingsway. An illustration of the new showroom is given.

Rise in Plate and Paper Prices

B. J., 1917, p. 127

Letter complaining of the cost of materials from a "Country Photographer".

Plate Prices

B. J., 1917, p. 129

Editorial on the cost of materials in England.

The Rise in Plate and Paper Prices

B. J., 1917, p. 141

Number of letters evoked by the letter from "Country Photographer" referred to above, expressing different views as to the cause of the rise in prices.

A. Simpson, of Leeds states that Royal Standard Extra Rapid plates give him complete satisfaction.

B. J., 1917, p. 141

Registered Trade Marks

B. J., 1917, p. 146

The British Journal commences the recording of applications for trade marks as well as the notifications of their having been placed upon the register and also of those trade marks which are removed from the register. The index of the Journal will therefore constitute a complete record of trade marks in the future.

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## Physics

Interferometer Measurements of Wave-Lengths in the Red K.W. Meissner  
Ann. Phys., 1916, p. 95

The lines of neon and argon in the region 5852 to 8424 A. U. were measured to an accuracy of 0.002 A. U.

The Use of a Spectrophotometer with a Jamin Interference V. Posejpal  
Refractometer

Ann. Phys., 1916, p. 419

The interference fringes are focused on the slit of a spectrophotometer, instead of a spectroscope. The accuracy of setting on a minimum is increased tenfold.

- A Qualitative Determination of the Reflection Coefficients of Some Metals in the Schumann Region I. C. Gardner

Astrophys. J., 1917, p. 30

Of ten metals, silicon is the best reflector in the region 1030-1600 A. U.

- A Clock of Precision C. O. Bartrum

Proc. Phys. Soc., 1917, p. 120

A slave clock is controlled electromagnetically by a master pendulum.

- Wheatstone Bridges and Some Accessory Apparatus for Resistance Thermometry E. F. Mueller

Bull. Bur. Stand., 1917, p. 547

- A Variable Self and Mutual Inductor H. B. Brooks and F. C. Weaver

Bull. Bur. Stand., 1917, p. 569

The design of a new variable inductor having a variation of over one millihenry, a high time constant, and a linear scale.

- A System of Remote Control P.G. Agnew, W.H. Stannard, J.L. Fearing for Electric Testing Laboratory

Bull. Bur. Stand., 1917, p. 581

Large rheostats, of wire wound on tubes, control current and voltage. The sliding contacts are operated by small motors; coarse and fine adjustment are secured by two motor speeds. The phase adjustments on a. c. generators are also operated by small two-speed motors.

- The Fundamental Principles of Good Lighting P. G. Nutting

J. Frank. Inst., 1917, p. 287

Curves are given for threshold sensibility, discriminating power and sensation, glare sensibility, dark adaptation and effect of size and brightness of spot on sensibility, together with the application of these data to practical lighting.

- A Specific Gravity Balance for Gases J. D. Edwards

J. Frank. Inst., 1917, p. 349

The balance beam is suspended on two needle points in an air tight case. One end carries a large globe, the other a small counterweight. The density of a gas introduced into the case is determined by the pressure required to produce a balance.

- The Quality of Light from an Illuminant as Indicated by its Color Temperature E.P.Hyde and W.E. Forsythe

J. Frank. Inst., 1917, p. 353

The temperature at which a black body color matches the illuminant is given for sixteen illuminants.

The Reflectivity of Tungsten in the Infra-Red W. Weniger and A.H. Pfund  
J. Frank. Inst., 1917, p. 354

The reflectivities of tungsten are given for the wave-length interval 0.59 $\mu$  to 4.0 $\mu$ , and for several temperatures up to 2056° K.

The Rotation of a Constant Deviation Prism W. E. Forsythe  
J. Frank. Inst., 1917, p. 355

If such a prism be rotated about the line of intersection of the bisector of the ninety degree angle of the prism and the reflecting face, the prism will remain in the position of minimum deviation for all wave-lengths.

The Fundamental Scale of Pure Hue and Retinal Sensibility to Hue Differences L. A. Jones  
J. Frank. Inst., 1917, p. 500

Curves are given for the retinal sensibility to hue difference, and for the hue scale. The paper includes the colorimetric analyses of the Ridgway color standards.

The Lumen as a Measure of Illuminating Power  
Ill. Eng., 1917, Vol. X, No. 1

A discussion by several authors of the advantages of rating illuminating power in lumens instead of candlepower.

Roentgen Rays from Sources other than W.D. Coolidge and C.N. Moore  
the Focal Spot in Tubes of the Pure Electron Discharge Type  
Gen. Elect. Rev., 1917, p. 272

The part played by extraneous radiations from the electrodes of the Coolidge x-ray tube is too small to warrant methods for minimizing it.

Measuring Flux Density and Permeability A. Hund  
Elect. World, 1917, p. 518

The use of differential measuring system for determining flux density and permeability up to any desired density.

A New Method for the Determination of the Refractive Indices of Liquids A. Ledoux  
Compt. Rend., 1917, p. 305

A thin quartz plate is placed in the liquid between crossed nicols and the incidence angle varied to produce extinction, or a violet color. The index is calculated from this angle by a formula.

A Precision Method of Uniting Optical Glass R. G. Parker and A. J. Dalladay  
Phil. Mag., 1917, p. 276

Pieces of glass in good optical contact may be permanently united by heating slowly under pressure to about 60° to 80° below the annealing temperature, maintaining this temperature for about an hour, and then slowly cooling.

## General and Inorganic Chemistry

Metabisulphites of Potassium and of Sodium

1532

B. J., 1917, p. 125

Extract from the "Repertoire Pharmaceutique" with regard to the chemistry of metabisulphites.

The Preparation of Chemicals for Laboratory Use

W. Rintoul

J. Soc. Chem. Ind., 1917, p. 247

An appeal for co-operation in research between industrial and academic laboratories.

The Training and Work of the Chemical Engineer

J. Soc. Chem. Ind., 1917, p. 276

A collection of the views of various experts and others in England.

Chemistry in War Time

R. B. Pilcher

J. Ind. Eng. Chem., 1917, p. 411

Article by the Registrar of the British Institute of Chemistry.

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## Analytical Chemistry

Detection of Hydrocyanic Acid

G. W. Anderson

J. Soc. Chem. Ind., 1917, p. 195

The sensitiveness of the various methods used to detect hydrocyanic acid are tested and guaiacol proves to be the most sensitive (1:2,450,000).

Microchemical Estimation of Small Quantities

M. Van Breukeleveen

of Platinum in Presence of Gold and Silver

J. Soc. Chem. Ind., 1917, p. 220

Determination of Aluminum as Oxide

W. Blum

Bull. Bur. Stand., 1917, p. 515

The paper for the most part confirms the work of previous investigators.

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## Organic Chemistry

Experimental Studies in

E.K. Mansfield and J.N. Stephenson

B1411

Beating Pulp

Chem. Abst., 1917, p. 887

Sodium carbonate and certain other materials accelerate the beating process. By the addition of one to five per cent of sodium carbonate, a stronger paper is produced in a given length of beating.

**Plastic Celluloid**

1512

J. Ind. Eng. Chem., 1917, p. 408.

Celluloid can be made plastic by soaking in ether; in this state it can be moulded to any form. This process is applicable to surgery.

**A New Celluloid Cement**

1512-1698

J. Ind. Eng. Chem., 1917, p. 408

A celluloid cement suitable as an adhesive for leather can be made as follows: Pure acetone 100 parts; cellulose 20-30 parts, and oxalic acid  $\frac{1}{2}$ -2 parts, are stirred together in a closed vessel at normal temperature until thoroughly mixed. Such a solution is less viscous than pure acetone solutions of the same celluloid content.

**Manufacture of Oxalic Acid**

Chem. Abst., 1917, p. 870

A full abstract giving an excellent idea of the existing processes and those which might be technically feasible.

**Presentation of the Perkin Medal to Dr. Ernst Twitchell**

J. Soc. Chem. Ind., 1917, p. 178

An interesting collection of accounts of Dr. Ernst Twitchell's scientific and technical contributions to the fat industries.

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## Patent Abstracts

### U. S. Patents

1219332

W. W. Kirby 0722

Another patent covering the well-known Vandyke Process of photo-lithography. The features stressed by the inventor of washing out the image with potassium hydrate and afterwards with alcohol have long been practised in the trade.

1219739

A. E. Jacobson 137

A Sensitive Photographic Paper consisting of a support of Japanese tissue which is impregnated with a silver emulsion distributed upon both sides so as to form an integral whole.

1219801

C. Bornmann, Assigned to Ansco Co. 2104

A Light-Trapped Air Vent for Folding Bellows Cameras. At the forward end of the bellows are two slightly separated plates having concentric series of perforations in staggered relation, the perforations of the outer plate being located behind the shutter casing.

1219672

T. R. Schoenleber · 215

A Film Feeding Device for Roll Film Cameras. The winding shaft and the unwinding shaft are connected by a chain and sprockets. A handle which slides in a slot upon the side of the camera carries a pawl which intermittently engages the chain so that movement of the handle will actuate the chain, sprockets, and spools to wind a fresh area of film into place. The extent of movement of the handle is progressively shortened according to scale to compensate for the increasing diameter of the film on the winding roll.

1218082

E. Hall, Assigned to Jersey City Printing Co. 221

An Advertising Device for Displaying Pictures Successively. A red picture is formed on one side of a transparent screen and a blue picture on the opposite side. The color of the light in back of the screen is changed at intervals by means of a color filter in the form of an endless belt. With blue light it is stated that the red image appears, while with the red light the blue picture is brought into prominence.

1218928

C. C. Clement, Assigned  $\frac{1}{2}$  to H. B. Kingsbury 2235

An Advertising Fade-Out Stereopticon in which the picture slides are carried by a pair of rotary discs driven by clock-work.

1220325

C. A. Ellsworth, Assigned  $\frac{1}{2}$  to H. C. Rubicam 231

A System for Releasing a Camera Shutter at the moment of maximum illumination given by a flash powder. The arrangement is such that the heat of the flash burns a thread which releases a spring, the latter actuating the shutter cable release.

1221063

C. A. Lare 231

A System for Electrically Igniting Flash Powder. The electric circuit includes two normally open sections which are closed only when the camera shutter is open and when a plate holder is in position in the camera with the slide fully drawn.

1219944 F. H. Hoffman, Assigned to Williams, Brown &amp; Earle, Inc. 247

A Blue-Printing Machine in which an endless belt carries the tracing and blue print paper over a curved, transparent window in the field of printing lamps.

1219129

G. W. Miller 264

A Photographic View Finder comprising a rectangular casing having a lens in front, an image screen in the top and an image screen in one side. The image screens are rectangular, the upper one having its longer side extending longitudinally, while the long side of the other screen extends laterally. A pivoted mirror throws the image from the lens upon either screen, as desired. Thus the finder shows a correct image whether the camera be held upright or on its side.

1219588 A.A. Ruttan and C.E. Hutchings, Assigned to E.K.Co. 2655

A Photographic Film Pack stamped out of sheet metal. The casing consists of two telescoping parts which are locked together by a clip at the top. The partition in the pack has a forwardly projecting flange which extends through a slot in the spring-pressed follower, so that the latter is properly guided when it presses the films forward into the focal plane.

1218946

C. Laing 2682

An Actinometer of the Photometer type in which the light from a small incandescent lamp is compared with the light to be measured. Peculiar shaped shutters independently regulate the light both from the lamp and from the source to be tested.

1221515

J. F. Davidson 3208

A Motion Picture Apparatus in which the film is fed from the unwinding chamber and into the winding chamber by sprockets driven continuously by a handle. The intermediate portion of the film is fed intermittently past the exposure or projection opening by means of sprockets driven from a spring motor which is alternately stopped and started by an escapement mechanism. When the film is wound up in the apparatus a steel tape is wound upon auxiliary reels in an opposite direction so that subsequently the rewinding of the tape will rewind the film.

1219221

W. Bauersfeld, Assigned to C. Zeiss 322

A Motion Picture Apparatus in which the film is moved continuously and the projected image from the film held stationary by optical means. This optical means includes stationary reflectors in front and in back of the moving film together with a series of double reflecting prisms carried on the periphery of a rotary wheel.

1219403

W.H. &amp; F.A. Selby, Assigned to Selby Patents Co. 322

A Motion Picture Machine in which the film moves continuously while the image is held stationary by compensating optical means. This optical means comprises an annular prism carried on a rotating disc and having a twist or spiral pitch throughout its length.

1219682

W. B. Vansie 323

A System for Making Synchronized Motion Pictures and Sound Records. Each actor is provided with a wireless telephone transmitting station which includes a trident-shaped antenna above the head and wires extending to the feet where they connect with the grounded metal platform constituting the stage. The microphone transmitter is placed upon the chest of the actor. At the wireless receiving station electro-magnetic impulses are produced to correspond with the original sounds. These impulses are recorded upon moving piano wire which is actuated synchronously with the motion picture camera.

1221407

E. H. Amet 323

An Apparatus for Taking Phonograph Records and Motion Picture Records in Synchronism. The two mechanisms are located side by side upon a common support and synchronously driven through a direct shaft connection. The shaft bears a coupling adapted to prevent the transmission of sound from the motion picture machine to the phonograph and the phonograph is supported upon inflated rubber balls further to prevent the sounds of the motion picture machinery from being recorded.

1221677

W. A. P. Cathcart 361

A Support for Motion Picture Cameras. It comprises a tripod bearing gimbals at the top which hold the camera level when taking pictures from a ship.

1218137

J. R. Vose and W. J. Owens 387

An Apparatus for Cleaning Motion Picture Films. The film passes through brushes and under a cleaning bath and thence through other brushes, over a partition into a rinsing bath. It is finally passed through an air blast, which quickly dries the volatile cleaning fluid.

## British Patents

B16810-1915 F. Twyman, J.S. Higham, &amp; H. Workman K3117 K363

Color Cinematography. Relates to optical systems for cameras for color photography or cinematography, comprising a block consisting of two prisms having partly transmitting and partly reflecting hypotenuses and a reflecting prism, the prisms being placed before lenses to produce two images in the same plane. According to one feature of the invention, the focal length of one lens is greater than that of the second lens and the first is placed farther from the image than the latter so that the images of objects at a determined distance are of equal size. The second feature of the invention consists in displacing the block formed by the prisms perpendicularly to the optic axis of the second lens and in the direction away from the first lens and providing a flat lateral extension on the first prism to which the second prism is cemented, or with which it is integral. The hypotenuse of the second prism may meet the extension at a distance from the front of the block or the hypotenuses may make an angle of less than 45 degrees with the optic axes of the lenses.

B16811-1915 F. Twyman, J.S. Higham &amp; H. Workman K3117 K363

Color Cinematography. Relates to optical systems for cameras for color photography, comprising a block consisting of two prisms having partly transmitting and partly reflecting hypotenuses, and a reflecting-prism, the prisms being placed before lenses to produce two images in the same plane. According to the invention, lenses which produce images of equal size when correctly placed between an object and a plane in which the image is to be produced are used, and the positions of the lenses are adjusted so that images of equal size of objects close to the camera or at the shortest distance from it for which the camera is to be used, are obtained.

B16812-1915 F. Twyman, J.S. Higham &amp; H. Workman K3117 K363

Color Cinematography. Optical systems for cameras for color cinematography comprising a prism system in front of two or three lenses for producing in the same plane color records simultaneously taken from the same point of view, are fixed by pins or otherwise in a standard position, and the lenses are capable of being adjusted relatively to one another and locked in standard positions so that films with records in standard positions are obtained, re-adjustment of the projection lenses when projecting films taken by two or more such systems being thus rendered unnecessary.

B4703-1915

L. H. and C. W. Mellor 048

Designs on Ivorine. The Ivorine after thorough cleaning is coated with bichromated fish glue, developed and dyed up with aniline black. After dyeing, the plate is treated with chromic acid, exposed to light, and washed. Then the whole surface of the Ivorine is painted over with a saturated solution of spirit soluble dye in acetone, this penetrating into the surface of the Ivorine except where it is protected by the resist, which is then washed off with caustic potash, and the Ivorine tablet dried and polished. The finished appearance is that of inlaid ivory letters.

B15999-1915

J. Ivanoff and A. Lamine 063

**Cinematography Apparatus.** The camera for taking pictures, adapted subsequently to give images in relief by projection upon a screen, is moved during exposure in a curved path concave to the objects, etc., the radius of which is the mean of the distance from the objective to the rear and front planes of the objects viewed. The axis of the objective passes continuously through a point in space midway between the objective and the background. Upon subsequent projection, the effect produced upon the observer simulates the solid effects obtained by monocular vision accompanied by a slight shifting of the eye. The camera is mounted upon rails supported by trestles in recesses of the trestle beams, and displaced by hand or automatically at a suitable speed; or it may have an oscillatory movement.

B103407-1916

C. H. Verity 069

**Synchronizing Photographs and Cinematographs.** In recording a play or an opera, the pictures are first taken by means of a cinematograph camera, and the words or other sounds are subsequently recorded by the actors speaking into a phonograph horn whilst watching their own movements as portrayed on the picture screen; and during the recording of the sounds, or during a combined reproduction, the speed of the photograph is adjusted into synchronism by the operator watching a tape which bears a series of marks corresponding to marks on the picture film.

B103309-1916 Addition to 17233/15

Siemens & Halske Akt.-Ges. 089

**Photography. Enlarging, Copying and Reducing.** Apparatus of the type described in the patent specification for printing type-characters and other matter photographically is modified by the substitution of one source of light only for the number of spark gaps employed in the construction described therein.

B102471-1916

W. E. Allan 2109

**A Plate Holder with means of moving a ruled screen relatively to the negative between successive partial exposures** so that on passing a ruled screen over a print from the negative, the subject will appear to be animated.

B17196-1915

L. J. E. Colardeau and J. Richard 227

**Stereoscopes.** The apparatus is for viewing ordinary stereoscopic pictures or colored pictures which need not be cut in two and inverted to be seen in relief, but especially radiographic pictures, and comprises means for viewing them directly through lenses in the usual way or also through a second optical combination as described in Specification 26,265/11, so that inversion is obtained, right becoming left, and rear planes front planes, giving the effect, in the case of radiographic pictures, of the patient having been turned over. The apparatus consists of a box with a hinged ground-glass screen, guides for the picture, lenses, eyepieces, combinations of a prism, and tetrahedron. The lenses and parts above them can be adjusted vertically by a rack and pinion. The eyepieces and the prisms and tetrahedra are on slides operated by a handle, and link-work is arranged between the slides, so that when the prisms, etc., are pulled out the eyepieces are centralized. The distance between the eyepieces may be adjusted, the optical parts below them moving correspondingly. For large radiographic pictures, diverging prisms are used in place of the lenses and the screen is dispensed with.

B103511-1916

H. R. Evans 3201

Cinematograph Apparatus. In pin feed-mechanisms for cinematograph apparatus, gripping-members are provided in combination with the pins so as to avoid tearing of the film at the perforations; the invention may also be applied to film-registering devices.

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### German Patents

DRP-295502

Chem. Fabr. vorm. Schering D13

Films free from damp spots can be coated on baryta bases by applying a substratum of albumin (J. Soc. Chem. Ind., 1917, p. 307.)

DRP-295236

K. Pape 163

Renewal of the activity of photographic developers by the addition of alkali or alkali carbonate. (J. Soc. Chem. Ind., 1917, p. 238).

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### Austrian Patents

72219 72220 72221—1916

Elektro Osmose A. G. 1421

Purification of gelatine for photographic purposes by treatment with an electrical current between diaphragms. (Chem. Abst., 1917, pp. 898-899).

72215-1916

Ver. Glanzstoff-Fabr. A. G. 1515

Lustrous Fibers from Crude Viscose by Means of Warm Mineral Acids. Thoroughly ripened viscose (8 days or more at 15-20°) is forced, after several filtrations, into 20% sulphuric acid at 40°, spooled and washed with warm water, and finally dried and desulphurized under tension. (Chem. Abst., 1917, p. 891.)

# Monthly ABSTRACT Bulletin



June, 1917

Issued by the Research Laboratory  
**EASTMAN KODAK COMPANY**  
Rochester, New York



*The Company*

# Monthly Abstract Bulletin

Vd. 3, No. 4

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June, 1917



## Photography

### Numbers on Exposed Plates

F2

B. J., 1917, p. 229

Description of method of numbering plates in a dark room by means of a printing machine.

### Partly Exposed Spools of Film

G5

Amat. Phot. Week., 1917, p. 364

Tells how to remove exposed portions of spool for development.

### Double Fixing

G6

B. J., 1917, p. 157

The editor strongly recommends two fixing baths used in succession.

### Pinholes with Mercury Intensifier

F. Vaughan and E. J. M.

H2

B. J., 1917, p. 210

Correspondents give methods of preventing these pinholes occurring.

### Pinholes with Mercury Intensifier

R. P.

H2

1651

B. J., 1917, p. 227

Letter from a correspondent, summarizing methods of avoiding these pinholes.

### Choosing a Printing Paper

C. E. K. Mees

J-13

Kodakery, Apr., 1917, p. 18

This article explains how it is necessary to choose a printing paper with a scale corresponding to that of the negative in order that the final print may represent correctly the various tones of the original object.

### Appliances for Printing, Enlarging, etc., Which Save Money, Labor and Space

J222-241

B. J., 1917, p. 159

These include an arc light enlarger without condenser, an artificial light vertical enlarger (chiefly for dealing with small negatives and enlargements), and a series of printing boxes for the making of vignetted prints from portrait negatives, for the speedy printing of amateurs' film negatives, and for printing by daylight on slow gas-light paper. A pattern of electrical switch for printing boxes is described, as also a simple arrangement for hastening the drying of negatives by gas heating, and a plan of fixing two backgrounds in the corner of the room.

### Making Prints

C. E. K. Mees

J3

Kodakery, May, 1917, p. 18

When making prints it is recommended to classify the negatives into weak, normal and dense. It is then simple to determine exposures by reference to a standard negative. An interesting point illustrated by curves is the fact that although with films and plates the contrast of the image is dependent on the time of development, the contrast increasing as development is continued, with Velox paper the contrast is fixed by the maker. After a few seconds the developer does not change the contrast of the print but only affects the density of the deposit.

Palladium Toning H. Schmidt J81 1665

Chem. Absts., 1917, p. 1093

With the substitution of potassium chloro-palladinite for potassium chloro-platinite a slightly stronger acid is needed. A toning bath is: Water, 1 liter; potassium chloro-palladinite, 1 gram; oxalic acid, 15 grams, used like a platinum bath.—Phot. Chronik, 1916, p. 265.

Theory and Practice of Palladium Toning F. Formstecher J81 1695

Chem. Absts., 1917, p. 1093

The yellow stain often produced consists of palladium sulphide due to irremovable adsorbed silver nitrate which produces palladium nitrate, which is converted to palladium sulphide in the hypo bath. Sodium chloride may be used in the toning bath to convert all soluble silver salts into silver chloride. After toning, an ammonia bath is desirable to prevent acids entering the fixing bath.—Phot. Chronik, 1916, p. 337.

Palladium as Substitute for Platinum in Celloidin Processes E. Florence J81 1665

Chem. Absts., 1917, p. 1094

In the toning bath potassium chloro-palladinite is substituted for platinum; acetic acid may be used as the acid. The finished print contains less silver than a similar platinum-toned one, which makes for increased stability of the image. In general, the tones are brown; but if a paper be used which gives a dark brown image after simple fixing, the palladium toning bath will produce a nearly black image. The addition of a small quantity of potassium chloro-platinite greatly reduces the tendency toward brown tones. For black tones, about 1 g. of potassium chloro-palladinite is needed per litre of bath; 50% more water for warm tones. The final tone appears only after the print dries.—Phot. Chronik, 1916, p. 169.

Development for Sulphide Toning H. Baker J84

B. J., 1917, p. 173

Various notes on producing toned bromides by bleaching with salt, sulphuric acid and potassium bichromate and redeveloping.

The Commercial Aspect of Color Cinematography K06

Mot. Pict. News, 1917, p. 2384

An interesting discussion on the subject between the editor and a skeptical correspondent.

Taking and Projecting Filters for Two-Color Cinematography A. S. Cory K286

Mot. Pict. News, 1917, pp. 1442, 1590, 1736

In this series of articles the author endeavors to summarize the available information regarding filters that have been used for the two-color process. Quotations from the work of Bennett on the taking filters used in the Kinemacolor process are given. He states that the best combination is a green filter, transmitting also a narrow blue band but cutting out the blue-green, and an orange-red. No quantitative data on these filters is given. Spectrophotometric curves of the Wratten A and B<sub>2</sub> filters are given

and the advantages and disadvantages of this pair for taking filters are discussed in detail. The author concludes that this pair is not correct for work in which blues are to be reproduced. Curves of the Wratten filters E<sub>2</sub> and P are then shown and discussed, the opinion being expressed that this pair represents the best combination for both the additive and subtractive processes. The subject of projecting filters for the additive process is discussed. Curves of Wratten filters No. 25 and No. 44 are given and their merits as two-color projecting filters are considered; the author concluding that this pair of filters, which are almost complementary to each other, is very satisfactory for the purpose.

Achromatism and the Use of Apochromatic  
Lenses in Color Cinematography

A. S. Cory K363

Mot. Pict. News, 1917, p. 2536

An article explaining the nature of achromatism and its significance in color photography.

The Prizma Process of Color Cinematography

A. S. Cory K/24

Mot. Pict. News, 1917, p. 1890

A detailed description of the Prizma process, which appears to be a modification of Kinemacolor. An attempt has been made to avoid the "stripping" effect of Kinemacolor by reducing the pull down interval to a minimum, and to improve the color rendering by the use of four filters instead of two, namely, red-orange, blue-green, yellow and blue. The effect of this modification is that in the case of a strongly red or green object, the color is emphasized only after every fourth picture. The pulsating effect, as a result of this, is minimized by the use of the "wide banded" filters. The Prizma camera takes about twenty-six pictures per second on panchromatic film, worked by the Geneva and sprocket intermittent. This movement appears the only one capable of giving steady results when working at the above speed. The article contains an illustration of the Simplex machine fitted with a Prizma attachment, which is so arranged that the filter gearing may be readily disconnected and the machine used for ordinary black and white projection. The author describes the screen results as follows: "The results by this process are characterized by extreme delicacy of color, and subdued shades are most admirably rendered. By reason of the extensive spectral overlaps in the taking filters, all details of the objects photographed are recorded, to some extent, in all of the four respective sensation images of a Prizma series, and the screen results are, therefore, characterized by a wide range of photographic gradations. The blue-green element of the projecting filter appears to favor the blue rather than the green, and as a result, skies and water are well reproduced. We have not noticed anything approaching a true green in any of the subjects so far exhibited, although this is probably by reason of the fact that no prominent greens existed in the subjects photographed. Yellow is not in evidence in the current Prizma films, although a wide variety of warm tones are apparent, ranging from chestnut-brown to a deep red-orange. Colors in full saturation are hardly within the scope of this process."

The Agfa Screen Plate

K/33

Chem. Absts., 1917, p. 1093

Photomicrographs show dark zones between the color particles, due to partial overlapping interpenetration; hence there is a certain loss of light in transmission even though no black material is used to fill the interstices. The sensitiveness of the newest plates has been increased so that the exposure is only ten times as much as for an ordinary plate.—Phot. Chronik, 1916, p. 253.

## Decennia Practica

K/42 K/44

B. J. Color Supplement, 1917, p. 14

Color Photography—Three-Color Prints on Paper. This has special reference to the Pinatype process, three-color diachrome, and the use of toned silver prints as color components.

## Decennia Practica—Color Photography

K/42 K/41 K2116

B. J. Color Supplement, 1917, p. 18

Three-Color Prints on Paper. These include the carbon process and the methods of Ives and Hamburger, as also others dependent on the fixation of dyes. Two references deal with one-exposure color cameras designed to correct distortion.

## A Modification in the Raydex Process

H. E. Rendall K/84

B. J. Color Supplement, 1917, p. 13

It is suggested that the color positives can be improved by treatment with a dye which is absorbed to the pigment and will intensify the color prints.

## A Modification of the Raydex Process

V. P. Davis K/84

B. J. Color Supplement, 1917, p. 17

The author does not consider that the suggestions made by Rendall are advantageous and thinks that the process is more satisfactory without the additional dyeing of the relief prints.

## Reproducing Broken Negatives

L2

B. J., 1917, p. 224

At a meeting of the Croydon Camera Club, Mr. Salt demonstrated in full detail the method employed by him of reproducing broken negatives.

✓ On the Relationship Between the Size of the Particle  
and the Color of the Image

C. Jones 013

Phot. J., 1917, p. 158

In April, 1911, a paper by C. Jones gave measurements of the silver grains present in various warm-toned images. He has now corrected these measurements for the irradiation which affects micrometric measurements in a microscope and finds that his corrected readings agree with the law that light is scattered by particles of a diameter equal to half the wavelength of the scattered light.

✓ Explanation of the Formation of the  
Latent Image

R. Formhals 014

Chem. Absts., 1917, p. 1092

(Cf. Chem. Absts., 1916, p. 564) In the preparation of silver bromide gelatine emulsions, colloidal silver bromide is first formed, whose particles, though ultra-microscopic, differ in size. The larger ones are further agglomerated in the treatment, the smaller ones remain dissolved in the emulsion. The finished emulsion contains these agglomerated particles, which determine the grain of the emulsion, distributed uniformly, also colloidal silver bromide of extreme fineness and very sensitive to light, dissolved throughout the mass. If it be assumed that these colloidal particles are approximately of molecular size and that silver bromide is in its

normal state strongly dissociated, it follows that the colloidal form is subject to internal stress; hence, dissociation will be effected by even a slight stimulus of the appropriate kind, as light or other radiation. Light does not alter the degree of dissociation; it establishes an equilibrium depending on concentration, temperature and other factors. By strong lighting, the formation and hence the concentration of the dissociated silver bromide may be so increased that the dissociation is reversed, which offers an explanation of solarization. In development, the dissociated silver bromide is attacked first; the resulting silver, in combination with the reduction products of the developer, then attacks the surrounding excess silver bromide and reduces it.—*Chem. Ztg.*, 40, p. 1001.

Using Focusing Cameras as Fixed Focus Cameras 019-215  
Kodakery, May, 1917, p. 21.

An article and reference table giving the necessary instructions for converting focusing Kodaks, Premos, and Brownies, making pictures  $3\frac{1}{4} \times 4\frac{1}{4}$  or smaller into fixed focus cameras.

Exposure and Size of Plate in Wide Angle Work 019-051  
B. J., 1917, p. 202

A curve is given showing the rule which governs the falling off of light from the center to the corners of a plate in the use of a wide angle lens. From the data it will be seen that up to an angle of little less than  $70^\circ$  the exposure at the edge of the field is only about half that at the center; at wider angles the difference becomes much greater. It is assumed that there is no cutting off from the lens mount, the effect being due only to the increased angle at which the light is falling upon the emulsion and the smaller proportion of light therefore which enters it.

Landscape Photography 021  
Phot. Min., 1917, No. 160

"A friendly guide for those who want to make pictures with the camera out-of-doors, instead of mere photographs. Profusely illustrated."

The Use of a Mirror in Portraiture A. F. Catharine 0313  
B. J., 1917, p. 217

Mr. Catharine makes use of a mirror for portraiture in comparatively small rooms, the mirror making it possible to employ a lens of considerable focal length, since by the use of the mirror equidistant from the camera and sitter the effective length of the room can be doubled.

Firelight Effects by Studio Electric Light H. E. Corke 0314  
B. J., 1917, p. 232

The author is well known for his firelight effects in portraiture; he gives methods of using electric light for producing the effect instead of daylight.

Commercial Photography 032  
B. J., 1917, p. 164

The beginning of a series of articles on this subject by "Practicus." The article advises the commercial photographer to try to make business by offering his services to firms who can utilize it. The article deals with apparatus, sets forth the large field of possibilities and gives advice on special branches of commercial work, such as interiors, houses, gardens, store fronts, and paintings.

- Commercial Photography 032  
B. J., 1917, p. 179

This installment deals with the photography of furniture, of miscellaneous small articles such as jewelry and leather goods, and of machinery.

- Commercial Photography 032  
B. J., 1917, p. 191

This installment deals with the photography of motor vehicles, of silver, china, and glass goods, dress materials and lace, and also with the making of photographs for advertising purposes.

- Commercial Photography 032  
B. J., 1917, p. 203

The last portion of the article by "Practicus" deals with such special branches of work as flashlight and the making of panoramic prints, the working up of negatives and of prints for catalogues and the question of prices.

- Filter Factors and Orthochromatic Plates 0461  
Studio Light, April, 1917, p. 10

An article explaining the function of orthochromatic filters and the meaning of the term "filter factor."

- Orthochromatic Photography A. Swan and A. L. Coburn 0561  
Phot. J., 1917, p. 150

General remarks on the use of orthochromatic and panchromatic plates with filters.

- Flashlight in Portraiture 0581  
Phot. J. Amer., 1917, p. 211

An article from the Eastman Kodak Publicity department.

- Installing Half-Watt Lamps for H. E. Corke 0583-2322  
Portraiture Studio

B. J., 1917, p. 169

Practical article pointing out various methods of utilizing the nitrogen tungsten lamps for studio work.

- The Society of Motion Picture Engineers E. K. Gillett 06  
Mot. Pict. News, 1917, p. 2700

The society was initially formed with a view to effecting a standardization of all apparatus used in motion picture photography. The author of the article, who is also secretary of the society, is hopeful that the society will be a means of removing much of the ignorance which at present exists regarding the scientific principles involved in motion picture taking and projecting.

- Fire Prevention in Motion Picture Studios 061  
Motion Pict. World, 1917, p. 1117

An article condensed from a bulletin issued by the Company on the subject.

- The Rex Film Renovator I. G. Sherman 0649  
 Mot. Pict. News, 1917, p. 2580

A description of the Rex film renovator. It is claimed that by treating old film with the Rex renovating fluid (presumably an oil dissolved in a suitable solvent) all dirt is removed and a greater part of the scratches eliminated. In the case of new or "green" film, the life is increased by virtue of a diminution of the brittleness, and the prevention of the formation of an incrustation of gelatine on the tension springs and aperture plate tracks.

- The Folmer and Schwing Finger Print Camera 081-219  
 Studio Light, April, 1917, p. 4

A camera so constructed that the front may be pressed firmly against the object on which the finger prints have been made, the illumination being furnished by four electric lamps directly inside the front of the camera but not in line with the lenses. Aside from its use in criminal investigations, the camera may be used for quickly obtaining records of signatures on checks, receipts, and for photographing details of patents, trade marks, labels or bits of printed or written matter not larger than the front opening of the camera, the reproduction made being in actual size.

- Topics of the Week 083  
 Amat. Phot., 1917, p. 194

German air photography: Describes cameras used on Zeppelins and aeroplanes.

- New Aeroplane Camera Perfected by Eastman Kodak Co. 083-219  
 Amat. Phot. Week., 1917, p. 367 and  
 Abel's Phot. Week., 1917, p. 848

- Kodaking the Birds C. I. Reid 098  
 Kodakery, May, 1917, p. 8

An article showing what can be done in this line of work with a Kodak fitted with a portrait attachment.

- The Electric Current in Bird Photography G. A. Bailey 008  
 Phot. Era, 1917, p. 218

Describes an electric shutter contrived out of parts of an ordinary electric bell.

- The Photography of Wild Animals in Captivity D. Seth-Smith 098  
 Phot. J., 1917, p. 145

- Notes on the Bromoil Process S. Brum do Canto /89  
 B. J., 1917, p. 218

The author deals with developing and bleaching formulas which he has found satisfactory, and discusses pigmenting at considerable length.

- Pyre Soda and Other Developers H. Baker 168  
 B. J., 1917, p. 234

General article on developers by well known professional

## Stable Iron Developer

163

Chem. Abst., 1917, p. 1098

Solution A is 30% potassium oxalate solution; solution B 30% ferrous sulphate slightly acidified with sulphuric acid; solution C 20% Rochelle salt. Mix five volumes of B with  $1\frac{1}{2}$  of C and pour rapidly into  $17\frac{1}{2}$  volumes of A. (Phot. Chronik, 1916, p. 220).

## Rodinal Developer for Positives

E. Florence 163

Chem. Abst., 1917, p. 1094

Rodinal is less rapid than metol. The addition of potassium bromide retards fog, but is without influence on the density of the image, which is controlled by the concentration. A concentration of 1 part rodinal to 20 water is the maximum usually taken, and gives maximum contrast; increased dilution reduces contrast and prolongs time of development. The color of the deposit ranges from pure black or blue-black to brownish black. All these qualities are most favorable to the use of rodinal for positives, especially for bromides; the indifference of rodinal to temperature changes being a further advantage. Gaslight papers require a more dilute developer than bromides, and some emulsions require an addition of potassium bromide. (Phot. Chronik, 1916, p. 153.)

## Note upon Hypo sulphite of Soda

C. de Albroit 164

Il Corriere Fotografico, p. 3075

The author deals with the alteration undergone by a fixing bath, with the silver hypo sulphite formed, the affinity of the hypo sulphite for gelatine, and the effect of developer in the fixing bath.

## Ammonium Persulphate

1657

Chem. Absts., 1917, p. 1093

A new Andresen formula for the persulphate reducer is: persulphate 2 g.; water 100 cc.; 2 g. ammonia (0.91); hypo 2 g. This gives clear whites and continuous gradation. Reduction may require 1 hour at 18-20°, but the bath will keep clear for this length of time. A solution of 2 g. persulphate in 100 cc. water with 1 cc. 1% hypo added, allowed to act 30-60 minutes, cuts away the highlights without noticeably affecting the shadows, and is especially suitable for under-exposed, over-developed plates. Phot. Chronik, 1916, p. 244.

## Orthochromatic Plates and Uncorrected Lenses

W. D. 2631

Phot. Focus, 1917, p. 285

Ortho plates and color screens tend to remove the difficulty caused by the chemical and visual foci not coinciding.

## Ray Screens Used in Multiple

W. Hood 2661

Camera Craft, 1917, p. 143

The writer's reasoning is based on fallacies.

## The Akeley Camera

31

Mot. Pict. World, 1917, pp. 797, 969

A detailed description of a motion picture camera constructed on entirely new lines. The camera itself is barrel shaped and is suspended as if from a derrick, so that it automatically sets itself plumb, although it may be clamped firmly in any position desired. The panoramic attachment likewise constitutes a new departure, this being geared to a governor so that a steady motion is assured, the camera being revolved by merely pushing with the hand instead of by turning a crank. The panoramic attachment being fixed to the camera, the latter may be operated without a tripod if necessary, and is therefore particularly useful when photographing animals and wild birds, and for emergency work generally.

## The Davisco Professional Kino

C. L. Gregory 31

Mot. Pict. World, Apr., 1917, p. 424

A motion picture camera in the form of a square box in which the film magazines are placed side by side.

## A Possible Static Reducer

H. G. Hall 3109

Camera Craft, 1917, p. 169

Recommends metal roller light traps in film magazines instead of usual velvet friction traps.

## Screen Surfaces

E. K. Gillett 324

Mot. Pict. News, 1917, pp. 3027, 3173

An article illustrating why the nature of the projection screen surface should be chosen to suit given conditions in any motion picture theater. It is explained why a long and narrow house with a perfectly horizontal throw should have a highly specularly reflecting screen, in order that the picture may be clear from every part of the house. In the case of a square house with greater reflective angles, the surface should not be so specularly reflecting in order that the distribution of light as viewed from any point in the audience should be as nearly uniform as possible over the entire surface of the screen.

## A Precision Tripod

324

Mot. Pict. News, 1917, p. 3035

A description of a precision ball bearing motion picture tripod.

## A Photographic Bibliography

Mot. Pict. News, 1917, pp. 2708, 3035, 3180

## Rothacker Issues a Booklet

Mot. Pict. World, April, 1917, p. 262

A review of a booklet indicating the possibility of the motion picture as a means of advertising.

On March 20, Dr. J. H. Smith died. For many years Dr. Smith manufactured plates and paper at Wollishofen, near Zurich, where he developed the "Utocolor" bleach out paper for making direct color prints. In 1908 he went to Paris to carry on the manufacture of "Utocolor" paper there. Dr. Smith discovered the thiosinamine group of sensitizers for bleach out dyes

B. J., 1917, p. 182

## Photo Engraving

Note on "Value of Chinese White and Process White" 07001  
 Process Work, Feb. 1917, p. 83

Note on "Cold Enamel" 07004  
 Process Work, Feb. 1917, p. 88

Note on "Lithographic Rollers" J. Goodman 0721  
 Process Work, Feb. 1917, p. 82

The Photographic Production of a Lithographic J. I. Crabtree 07211  
 Key on Zinc and Aluminum  
 B. J., 1917, p. 208

Communication No. 48 from the Research Laboratory. By preparing the zinc with a 1% solution of citric acid and the aluminum with a 1% solution of oxalic acid an image can be obtained by sensitizing with a mixture of ferric ammonium citrate and potassium ferricyanide.

The Progress of the Offset Press 0723  
 Photo Engr. Bull., April, 1917, p. 23

An article from the "National Lithographer," which states there are nearly 1,000 offset machines in the United States. If this must be discounted as much as other statements in the article, there are considerably fewer.

The Recent Rise of the Woodcut W. A. Bradley 0731  
 Printing Art, March, 1917, p. 25

Shows how photography can be employed in wood engraving, though it is objected to by some artistic engravers.

American Collodion Emulsion Ace Chemical Co. 162  
 Amer. Photo Engr., April, 1917, p. 218

An advertisement for collodion emulsion at \$8.00 per quart and 50 cents per ounce for sensitizers stating that negative making will be only one-half to one-quarter as expensive as with dry plates.

Simultaneous Exposure Process Camera C. Jones 216  
 Photo Engr. Bull., March, 1917, p. 13

An account of a new triple camera with exact focusing scales and similar time saving devices.

The Copper Situation in England  
 Amer. Printer, May, 1917, p. 37

The British Government requiring all copper, the photo-engravers could only procure it on condition that they returned an equivalent weight of used copper, so that all engravings are now sold on condition that they be returned within one month unless an equal weight of copper can be exchanged for them. Failing this, half-tone engravings are made on zinc instead of copper.

"Process Work" announces that on account of the war it will henceforth be published only quarterly, and that the publication of the "Process Year Book" is indefinitely postponed.

Process Work, Feb., 1917, p. 81

## Physics

### The Theory of Vibrations

E. Charron

Ann. de Phys., 1917, p. 5

Principles are set forth by which the writer is able to explain the mechanism of the maintenance of vibrations and also their characteristics, in very varied cases.

### The Initial Phase of the Discharge in a Magnetic Field

A. Righi

Ann. de Phys., 1917, p. 97

An abridged translation by the author, considering previous work on the subject as well as his own recent work.

### The Law of Photo-Electric Photometry

J. Kunz

Astrophys. J., 1917, p. 69

The author shows that in the older forms of photo-electric cell, the current is not proportional to the light intensity. Changes in construction are described which give strict proportionality. Talbot's law is found to hold.

### The Cause of the So-Called Pole-Effect in the Electric Arc

T. Royds

Astrophys. J., 1917, p. 112

The writer believes that line displacements in the arc are due not to temperature gradients but to difference of vapor density.

### The Effect on the Eye of Varying Degrees of Brightness and Contrast

J. Kerr

Ill. Eng., 1917, p. 41

The author sets forth some fundamental aspects of the physiology of vision dealing principally with adaptation, convergence and accommodation. He then proceeds to examine practical problems in illumination and discusses desirable conditions.

### The Lumen

A. P. Trotter and A. Blondel

Ill. Eng., 1917, pp. 59 and 61

Two articles which take the form of a discussion largely for the purpose of defining the lumen.

### On the Measurement of Visual Stimulation Intensities

L. T. Troland ✓

J. of Exper. Psychology, 1917, p. 1

This paper is a review of facts and problems written primarily for the experimental psychologist though of broad general interest. The author treats the significance and usefulness of photometric as compared with radiometric measurements, then defends the use of a fielder photometer and discusses the influence of pupillary size upon visual stimulus intensity. The author defines a new term, *photon*, and justifies its use as the standard unit of visual stimulus intensity.

**Visual Discrimination of Rectangular Areas Illuminated  
by Varying Degrees of Achromatic Light**

G. F. Arps

J. of Exper. Psychology, 1917, p. 41

The author studies the efficiency of discrimination in the perception of differences in area and analyses the factors involved in such judgments.

**A Theory of Color Vision**

R. A. Houstoun

Sci. Progress, 1917, p. 377

The author describes graphically how a compound pendulum forces a simple pendulum in the same system to vibrate and then applies the curves to the explanation of the selective action of the eye. The compound pendulum represents the energy of a light wave and the retina contains a large number of vibrators which perform the function of the simple pendulum. The explanation is rather ingenious but does not do much toward settlement of the difficulties involved in a theory of color vision.

**Notes on the Change of Resistance of Certain  
Substances in Light**

T. W. Case

Phys. Rev., 1917, p. 305

The author has been making a systematic search for substances which show a change of electrical resistance when exposed to light, and has found several new light active substances. A brief description of the apparatus used is given, and a very extensive list of substances together with the observed effect of light on their conductivity.

**Glasses for Protecting the Eyes  
from Injurious Radiations**

W.W. Coblentz and W. B. Emerson

J. Frank. Inst., 1917, p. 629

The data deals with an extensive group of glasses available for protecting the eyes from (1) the ultra-violet, (2) the visible, (3) the infra red. For protection from the ultra-violet, black, amber, greenish yellow and red glasses are efficient while for shielding from the infra-red deep black, yellowish green and gold plated glasses are good. Gold plated glasses transmit only 1% of the infra-red rays emitted by a furnace at 1100° C.

**A Polarization Flicker Photometer and Some Data  
of Theoretic Bearing Obtained by It**

H. E. Ives

Phil. Mag., 1917, p. 360

This comprises a combination of a double-image prism with a rotating Nicol prism, in which the transition from one field to the other is gradual, following a cosine law. With it predictions of the author's previously published theory have been accurately verified.

**Recent Progress in Spectroscopy**

E. P. Lewis

Nature, April, 1917, pp. 115 and 124.

An address before the physics section of the American Association for the Advancement of Science in New York, Dec. 1916.

## General and Inorganic Chemistry

- Action of Potassium Permanganate with Metals W. Foster  
Chem. News, 1917, p. 73

Dilute solutions of potassium permanganate are reduced by finely divided metals including platinum and gold.

- Reducing Matter Extractable from Filter Paper R. S. McBride and J. A. Scherrer  
J. Amer. Chem. Soc., 1917, p. 928

Various tests as applied to different makes of filter papers showed that the amount of permanganate reduced by extracted matter is appreciable and can be readily avoided if the filter paper is given a preparatory washing with 25 cc. of the reagent. The reducing substance extracted from the filter papers as shown by A. S. McDaniel is furfural or a closely related substance.

- Pervaporation, Perstillation and Percrystallization P. A. Kober  
J. Amer. Chem. Soc., 1917, p. 944

Certain well known and often recorded facts of transpiration through membranes are here treated under the above pertinent and presumptuous titles.

- Metabisulphites of Potassium and of Sodium P. Carles  
J. Soc. Chem. Ind., 1917, p. 289

The author comments upon the stability of sodium metabisulfite and the presence of iron.

- New Method of Precipitating Platinum Sulfide and Analysis of Platinized Asbestos V. N. Ivanov  
J. Soc. Chem. 1917, Ind., p. 290

Magnesium chloride is added to prevent the formation of a stable colloid of platinum sulfide.

- A Simple and Efficient Gas Absorption Apparatus H. D. Richmond and E. Hembrough  
J. Soc. Chem. Ind., 1917, p. 317

An apparatus for absorbing dilute gases in limited volumes of liquid.

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## Analytical Chemistry

- Improvements in the Copper Method for Estimating Amino Acids P. A. Kober  
J. Ind. Eng. Chem., 1917, p. 501

- A Study of the Determination of Potash Chiefly Concerned with the Lindo Gladding Method P. L. Hibbard  
J. Ind. Eng. Chem., 1917, p. 504

The platinum method is recommended and details of manipulation are given. A complete bibliography of the subject is appended.

The Estimation of Small Quantities of Cobalt . . . . . A. D. Powell  
J. Soc. Chem. Ind., 1917, p. 273

Determination of Free Alkali Hydroxide in Soap . . . . . V. A. Izmailski  
J. Soc. Chem. Ind., 1917, p. 295

The errors as obtained by the alcohol method or the barium chloride method are pointed out. A modified barium chloride method is offered.

## Colloid Chemistry

✓ Osmotic pressure of Gelatine . . . . . W. Biltz, G. Bugge and L. Mehler . . . . . 1421  
J. Soc. Chem. Ind., 1917, p. 297

The absolute value of the molecular aggregates of technical gelatine decreases with their technical value. The viscosity of gelatine increases with increase in the size of the particles, while the "gold number" decreases under same conditions.

Protein "Bodies" and "Anti-Bodies" as Products . . . . . M. A. Rakuzin  
of Adsorption  
J. Soc. Chem. Ind., 1917, p. 302

The selective adsorption of proteins, enzymes, etc., by precipitated aluminum hydroxide is regarded as analogous to the separation of toxin and anti-toxin when serums are treated with adsorbents.

Theory of cold Vulcanization  
Caoutchouc, 1917, p. 9168

A theory for the constitution of cold vulcanized rubber.

The Possibility of Regenerating Vulcanized Rubber . . . . . A. Dubosc  
Caoutchouc, 1917, p. 9173

Critical review of recent work by Harries. The problem is still fundamentally unsolved. Harries concludes that caoutchouc in course of vulcanization undergoes a modification of the molecular aggregate volume. Dubosc considers it established that vulcanization involves two phases: in the first the caoutchouc undergoes an inner structural change in step with adsorption of sulphur; in the second, this structure change is reversed and the caoutchouc combines with sulphur to saturation of its double linkages.

Isolation and Characterization of the Insoluble . . . . . Spence and Kratz  
Components of Raw Rubber  
Caoutchouc, 1917, p. 9174

These substances appear to be gluco-proteins.

Viscosimetric Testing of Waxes . . . . .  
Caoutchouc, 1917, p. 9178

The Italian engineer Fabris uses the viscosity of 10% solution of the wax in nitrobenzene to test purity.

## Organic Chemistry

- Studies on Paper Pulps** W. H. Smith 1411  
Paper, May 2nd, 1917, p. 11

Original Technologic Papers of the Bureau of Standards, No. 88. (1) Chemical characteristics. Methods of analysis. (2) Susceptibility tests (to oxidation and hydrolysis). (3) Deterioration tests. Tables of results are given.

- Electrolytic Preparation of Aminophenols** Soc. Chim. Basle 15314  
Chem. Soc. Abst., 1917, (i) p. 197

The yield of aminophenol over amine is favored by the use of a cathode of two or more metals. The amount of acid may be reduced to very little more than that necessary to combine with the resulting base. Cathodes of copper with lead and arsenic in the solution, and lead cathode with bismuth in the electrolyte are mentioned, also copper-mercury and copper-tin-arsenic. (Brit. Pat. 18081-1915).

- Preparation of Monalkylated Aromatic Amines** G. T. Morgan  
Chem. Soc. Abst., 1917, (i) p. 197

The primary aromatic amine and formaldehyde are added slowly and concurrently to a suspension of zinc dust in alkali. (Brit. Pat. 102884).

- A New Test for Size Fastness** S. A. Okell  
Paper, April, 11th, 1917, p. 20

An application of Kohlrausch's method of determining conductivities. Drawings showing modifications and chart of curves obtained are given.

- Action of Bromine Water on Ethylene** J. Read and M. M. Williams  
Trans. Chem. Soc., 1917, p. 240

The main product is ethylene bromohydrin, together with some ethylene dibromide.

- Trimethylglucose from Cellulose** W. S. Denham and H. Woodhouse  
Trans. Chem. Soc., 1917, p. 244

Continuation of the elucidation of the constitution of cellulose by a study of the products of hydrolysis of methylated cellulose.

- The Determination of Alcohol and Water in Ether** R. L. Perkins  
J. Soc. Chem. Ind., 1917, p. 521

Specific gravity charts for mixtures up to 4% alcohol and to 1% water. In analysis, the s. g. of the ether is determined at 25°/25°. From 100-200 cc. are then dehydrated with potassium carbonate and the s. g. again determined. By comparison with the charts, the per cent alcohol and water can be obtained.

- Methyl Alcohol and Acetone from Soda** A. H. White and J. D. Rue  
Pulp Industry  
J. Soc. Chem. Ind., 1917, p. 383

The waste liquors, on concentration and destructive distillation, yield methyl alcohol, acetone, and a tar containing about 50% of phenols.

# Patent Abstracts

## U. S. Patents

1222925

P. D. Brewster K1212

A Film for Colored Motion Pictures. It includes two color sensitive films superposed upon each other with the sensitive surfaces outward, the films being spaced along one edge by a narrow tape which is sewed or riveted between them. When color sensation impressions are made upon this film in a suitable two-color camera, an opaque strip is inserted between the bodies of the films to prevent conflict in the light action. The exposed films are separated, developed, and then reassembled with their spacing tape. The positive double coated film is then placed between the superposed negative films and printed.

1223881

L. Gaumont, Assigned to E. K. Co. K82 K868

An Optical System for Three-Color Motion Picture Projection. It includes three objectives provided with five adjustments, so that the sizes of the different colored images may be made the same and the images exactly superposed, there being further provision to allow for varying spacing of the images on the film.

1221457

I. Kitsee K/33

A Method for Making the Colored Elements of a Screen Plate. Three cardboard supports of equal area are surfaced with gum arabic. When dry, colored celluloid films are flowed over the gum coatings, the celluloid on one support being colored blue-violet, upon another green, and upon the third red. When dry, these celluloid films are subdivided by lateral and longitudinal cross cuts 1/500 of an inch apart. The films are then soaked in water so as to dissolve away the gum and separate the minute colored film pieces, which are mixed and assembled on a screen plate in the regular way.

1223664

P. D. Brewster K/43 K35

An apparatus for Treating Cine Film. It includes a tank having a slot in its upper face, across which the film is carried in closely fitting guides so that dye solution from the tank will be thrown by rotary paddles against the under face of the film without spreading to the upper face. A vacuum is created in the tank below the film and a blast of air blown on the upper face of the film so as to further insure against spotting the upper surface.

1219965

H. G. Leisenring X423

A Plate Holder for X-Ray Exposures. It consists of a metal casing or shield which is 50% longer and 50% wider than the frame in which the plate is fastened. In the center of the casing is an aluminum window equal to a quarter of the area of the plate. The plate is rapidly manipulated to bring each quarter thereof under the aluminum window so that four pictures of one part of a patient may be rapidly made without moving him.

1223255

W. G. Chapman 082

An Electrical Protecting System designed to automatically secure a photograph of a burglar or vandal.

1221902

N. Pedersen, Assigned to A. Brock, Jr. 083

A Mounting for holding a camera in a vertical position on an aeroplane. The camera is mounted in gimballs, the oscillations of which are dampened by dashpots.

1220245

C. H. Little /71

A Drafting Material designed to replace the ordinary tracing cloth. It comprises a sheet of paper or tracing cloth, upon which is a layer of kaolin and glue. Above this is a coating of dark brown pigment and glue. If necessary, the reverse side of the paper may be given a waterproof coating. In use, lines are cut through the upper coatings by a stylus and the drawing so made constitutes a negative for blue printing.

1221825

J. E. Brandenberger, Assigned to La Societé dite 123  
"La Cellophane"

A Photographic Film comprising a sensitive layer sandwiched in between two protecting layers, at least one of which is constructed of cellulose and is both transparent and permeable to liquids.

1221304

W. F. Folmer, Assigned to E. K. Co. 2181

A Reflecting Camera which is provided with a safety curtain for protecting the plate except when the mirror is in its raised position where it seals the focusing aperture. The shaft of the mirror carries a segment which engages a gear upon the winding roller of the safety curtain.

1222310

M. Lichtman 2132

A Photographic Camera of a relatively simple type. In the rear of the exposure chamber are vertical guides into which the plate to be exposed is slid from a bag-like plate holder.

1221558

H. B. Meredith 2152

A Quick Winding Mechanism for roll film cameras operated by a spring motor. When the shutter release is actuated, it first makes the exposure and second releases the motor to wind up a fresh section of film. The arrangement is such that when the initial lead strip of black paper is being wound up during the loading of the camera, the spring motor will be automatically put under tension.

1221847

A. B. Elmstrom and J. A. McDonald 2152

A Device for preventing double exposure in roll film cameras, the film being of a special type which has a series of perforations along one edge and slots between the successive exposure areas. When an exposure is made the shutter lever is locked against further actuation until the winding of a fresh section of film releases the lock. The perforations are engaged by a gear connected with the unlocking device.

1223858

J. A. Desjardins and C. T. Desjardins 2152

A Roll Film Camera provided with an arrangement to prevent double exposure. After the shutter lever is pressed to make an exposure it is maintained in an inoperative position until a fresh section of film is wound up, the winding of the film acting through a slide and cord to release the shutter lever for further actuation.

1222531

S. C. Cooper 2153

An Attachment for Roll Film Cameras to enable titles or other data to be printed upon the film. It consists of a shell which slips over the camera body and contains a web of paper on which the writing is done through one window. It is then moved under a second window, where the writing is printed through an opening in the camera back onto the film.

1222596 G. C. Beidler 2172

A Combined Camera and Developing Apparatus of the type in which the photographs are taken upon a band of paper fed from a roll through an exposure chamber into a developing tank and thence to a fixing tank. A special device is provided for submerging the paper beneath the fixing bath.

1222597 G. C. Beidler 2172

A Copying Camera and Developing Device for paper in which the latter is fed from a roll through the exposure chamber and into a vertical developing tank. From thence the developed paper is drawn horizontally into a fixing bath, the developed portion being severed in conjunction with such horizontal movement.

1224686 A. Frisch, Assigned to A. Frisch & Co. 219

A Meter Reading Camera in which the month, day and hour are photographically recorded simultaneously with the meter reading.

1221418 E. L. Clark, Assigned to National Carbon Co. 2231

An Incandescent Light for Projection Apparatus. The interior of the globe is silvered almost entirely except for a small transparent window in one side, the size of which is equal to the area of the plate or film to be projected. By thus providing a small exit for nearly all of the reflected light a nine-fold intensity is alleged to be produced.

1222766 W.C. Huebner, Assigned to Huebner Bleistein Patents Co. 2321

A Lighting System for automatically varying the period of photographic exposure in accordance with variations in the intensity of the light due to fluctuation in the lighting current, so as to give a definite ultimate amount of light energy. The mechanism includes an electric lamp and an electric motor, the speed of which varies with changes in the lamp current, a controlling device being driven by the motor and being set initially for the required exposure.

1223214 F. L. Stuber 241

A Printing Machine comprising a box carrying a pivoted printing frame in its top and having one light mounted within it and another placed above it. When the frame is turned face inwardly, the inner lamp is automatically operated and when the frame is turned upwardly, the outer lamp is automatically turned on. A clock mechanism serves to turn off the lamps after a predetermined interval.

1223057 L. F. Libby 251

A Plate Holder or Rack for use in developing. It comprises a frame made out of spring wire and bearing three hooks which can be easily sprung apart when inserting a plate.

1222654 S. A. Mischansky, Assigned  $\frac{1}{2}$  to S. Lniski 2541

An Apparatus for developing roll film in daylight. It includes a box having a fixing chamber at one end and a developing chamber at the other, the two chambers being connected by a narrow slot or passage. Spaced rubber tapes are mounted to be wound from a reel in the fixing tank to a reel in the developing tank and vice versa. The film spool is placed in a special box and the film end attached to the tapes, whereupon when the tapes are wound up in the developing box, the film will be coiled up with its convolutions spaced apart by the tapes. After developing, the rear end of the film is attached to the tapes and the latter wound into the fixing chamber, thus carrying the film into the fixing bath. A slot is provided for the removal of the protecting paper prior to development.

1223807 R. B. Leavitt 2626

A Shutter Actuating Mechanism for enabling the operator to include himself in the picture. It is driven by clock-work and actuates the pneumatic release of the shutter.

1220957 N. B. Conway 269

A Carrying Case for both a roll film camera and reserve spools of film. It consists of an extra long case divided by a transverse strap into an upper compartment for the camera and a lower compartment for the film. Access is had to the lower compartment through a side flap.

1220354 E. N. Lodge 283

A Photographic Mount having embossed pockets integrally formed at each of the corners thereof so that the corners of the print can be slipped therein.

1223332 C. E. Akeley, Assigned to Akeley Camera, Inc. 3104

A Film Box for Motion Picture Cameras particularly designed for use with Mr. Akeley's recently developed camera. It includes two telescoping sections adapted to be adjusted to open and close the film aperture and it also contains details relating to the rotation of the film spool.

1223341 C. Kesses 319

A Motion Picture Camera intended to take pictures upon a continuously moving unperforated film strip. The latter is driven by a set of rollers and the lens, shutter and exposing slide are all vertically movable in suitable timed relation.

1220195 S. Cocanari 3201

A Motion Picture Apparatus for minimizing the wear and tear of the film. It includes two narrow endless metal bands bearing perforations which register with those of the film. The teeth of the driving sprocket pass through the film and engage the perforations of the bands whereby the latter receive most of the wear and stresses.

1228147 A. and L. Chronik 3203

A Shutter for Motion Picture Cameras in which the sector disk is provided with supplementary leaves which may be moved to vary the width of the shutter slit while the machine is running.

1222505 W. O. Worman 3208

A Rewinding Device for Motion picture film. It is driven by an electric motor and provided with an automatic switch which is opened to stop the motor when the film is rewound.

1222626 H. Hess 323

An Apparatus for synchronizing a motion picture projector and a phonograph. The two are driven from a common source of power and the speed of the projector is automatically varied by means of a specially calibrated helical cam.

1223447 J. E. Thornton, Assigned to J. Owden O'Brien 346

A Printing Apparatus for Motion Picture Film of the slow printing type. The film is carried around a rotary drum provided with padded grooves surrounding which are curved mercury vapor lamps.

1219712 C. DeMoos, Assigned to Motion Picture Properties Co. . 387

An Apparatus for Cleaning Motion Picture Film. The surface of the film is wiped by a wick saturated with alcohol and then passed over a set of rotary felt buffers which dry and polish it.

1221704 E. Ducher 387

A Wiper for Motion Picture Film. The film is drawn over two curved wiping surfaces arranged in zigzag relation upon a pivoted arm.

### British Patents

B103069-1916 Gartlgruber (née Assmann) K043

Pictures. The images of stereoscopic or non-stereoscopic pairs of pictures are colored mechanically, one image being colored in one color and the other in one or more colors, so that when viewed stereoscopically, the images blend and appear as a complete colored picture. The color or one of the colors of one image may be complementary to the color of the other image.

(Note. This method is well known, but does not work.)

B104162-1916 D. F. Comstock K32

Optical Projection Apparatus. Apparatus having two or more projection lenses for obtaining pictures in register has a transparent refracting body mounted in the axis of one or more of the lenses so as to be capable of angular movement to displace the virtual position of the object of which the image is to be projected.

B16201-1915 C. W. R. Campbell and F. G. A. Roberts K322

Color Cinematography. The invention is broadly similar to that of Specification No. 16,200, 1915, but includes also means for using color filters in conjunction with the small lenses, and so adapting the system for the taking (and projection) of animated photographs in colors.

B103890-1916 J. H. Christensen K/44

Photomechanical Printing Surfaces; Color Photography; Toning and After-Treatment. Porous silver-sensitized films are treated, after exposure and development, with substances which react with the unaltered silver compounds to produce a substance capable of filling the pores of the film; the resulting film, which varies in porosity in proportion to the light action, may be used to produce pictures or photomechanical printing surfaces. The sensitive film may be a dry collodio-silver-bromide film rendered porous by the presence of glycerine, benzoic acid, pyrocatechin, or other soluble substance, or a gelatine film, and may be treated with solutions of alkaline sulphides containing an excess of sulphur, sulphostannates, Schlippe's salts, or similar substances which readily give off sulphur, or iodides or sulphocyanides. The sulphur compounds may be mixed with a solvent for silver salts such as a sulphocyanide, with bromides or bichromates to increase the pore-filling effect, or with iodides or basic reacting substances to reduce it. Printing plates for producing color photographs from separate color record or multicolor screen negatives may be prepared with colloid films containing dyes upon which collodio-silver-bromide films are deposited. After development and treatment, the plates are used to print superposed color images on paper or transparent film by means of the dyes contained in them. Alternatively, the plates may be initially free from dye and be soaked in dye previous to being used for printing. Correct register in the production of prints from multicolor-screen negatives may be obtained by placing the printing plates in frames having holes into which project pins on frames containing the negatives and the material to be printed on. The films may be used as etching resists in the production of photomechanical printing surfaces. Specification 25419/13 is referred to.

B17657-1915

S. T. Coulson 2181

**Lamps, Projecting Lanterns, etc.** An approximately ellipsoidal lamp reflector has the form traced out by the revolution of part of an ellipse about a line near to, and parallel or slightly inclined to, the major axis. The reflector may be used in conjunction with a converging lens beyond the second focus, at a distance equal to the focal length of the lens, or a diverging lens between the foci. Such arrangements may be employed in optical lanterns, cinematographs, and motor vehicle and like lamps. An additional reflector of parabolic or ellipsoidal form may be employed, for instance in search lights and signalling lamps, and also in optical lanterns and cinematographs, in which case the second reflector is ellipsoidal and the lens and the second reflector are arranged to bring the light to a focus at the same point.

B100363-1915

Neff &amp; Lumley, Inc. 241-253

**Automatic Printing Machines.** The invention consists of a machine of elaborate construction, in which fluid pressure, under electric or other motive power, is employed to control the time of exposure. and at the same time to effect the removal of the exposed paper and its replacement by a fresh section. The apparatus consists in principle of a large pair of reels, from one of which (on to the other) the sensitive paper is wound. In printing, the negative lies on a bed placed between the reels, the dwell of the paper against it and the maintenance of electrical circuit through a series of lamps being timed by the operation of a water-filled extensible chamber. In enlarging, the negative is replaced by clear glass, and the apparatus then used as an enlarging easel.

B102513-1916

B. J. Hall 281

**Trimming Prints.** The invention relates to the hinged desk pattern of trimmer. The desk is fitted with mechanism, by which the upper blade is drawn down and the card, etc., clamped, whilst, at the same time, the table is held rigid until the trimming operation begins.

B102363-1916

R. W. James for Film Fire Prevention and 3209  
Motion Picture Equipment Corp.

**Cinematograph Mechanism.** A safety shutter for fire prevention based on the passage of the film band in contact with a roller which is mounted on the end of a pivoted bar. The latter is kept at a high angle as long as the film is being properly fed, but on the film breaking or becoming slack the bar falls, and thereby permits a shutter to descend, cutting off rays from the light source.

B16200-1915

C. W. Campbell and F. G. A. Roberts 322

**Cinematography.** The invention consists of a system for a cinematograph camera or projector, in which the film moves continuously. Immediately in front of the gate is placed a large positive lens, whilst somewhat in front of this latter is mounted an endless chain of small positive lenses. This series of lenses is geared to the film movement mechanism in such a way that each picture image remains stationary on a given section of film as the film-band and lens-chain are rotated.

B16202-1915

C. W. R. Campbell and F. G. A. Roberts 322

**Cinematography.** The invention relates to Nos. 16200 and 16201 of 1915, in particular as regards the provision in front of the rotating endless band of lenses of an optical system the flat image formed by which is reproduced by one of the component lenses of the rotating lens band. This is when the subject is being photographed on to the film. In projection the image formed by the moving lens is projected onto a screen by the optical system.

## French Patents

20114, addition to 479138-1916

C. Nieto 1697

**Photographic and Like Plates.** An adhesive paste is made, in the cold, of water 1000 g., white pulverized gum lac 650 g., pulverized borax 80 g., crystallized sodium carbonate 20 g. A liquid adhesive is made, in the cold, of water 1000 g., white pulverized gum lac 400 g., borax 60 g., crystallized sodium carbonate 20 g., neutral glycerol 50 g. In the adhesive cream the white pulverized gum lac may be replaced by red or orange gum lac in scales. (Chem. Absts., 1917, p. 1094).

## German Patents

DRP292193-1914, add to 290872 H. Arnold and M. Levy-Dorn CX116

**Photographic Plates Especially Sensitive to Roentgen Rays from Radio-Active Substances.** In carrying out the principal process, some of the additions made to the emulsion, e. g., colloidal selenium solution, have been found to produce a veil effect in the picture. To overcome this objection, two large layers are poured on the glass plate, of which one contains the emulsion with the addition, while the second consists of the usual emulsion for photographic plates. (Chem. Absts., 1917, p. 1095).

DRP292852-1914

A. Spitzer and L. Wilhelm J84 1665

Previous attempts to substitute in toning photographic positive copies tellurium chloride solutions for the usual gold chloride solutions have been unsuccessful since tellurium chloride solutions are stable only in the presence of excess acid, and therefore tone slowly. Later investigations have shown that a rapid and certain toning of prints with sodium tellurite or tellurate, or the free acids or their compounds can be effected in the presence of sodium thiosulphate or ammonium thiosulphate in the toning-fixing bath. E. g., prints were toned in a toning-fixing bath of the composition 50 cc. of a 10% sodium thiosulphate solution, 1 cc. of a 5% solution of sodium tellurite. The toning was finished in 5-10 minutes. Also an addition of a lead salt has been effective, e. g., a bath of 80 cc. of a 4% sodium thiosulphate solution, 1 cc. of a 10% solution of lead nitrate, 0.6 cc. of a 10% solution of citric acid, 0.2 cc. of a 5% solution of sodium tellurite. Tellurous acid dissolved in some citric acid can be used instead of sodium tellurite or tellurate, as well as telluric acid. (Chem. Absts., 1917, p. 1095).

DRP292347-1911

B. Bichtler K/33

**Polychromatic Double Screens.** A thin plate is coated on both sides with chromated gelatine, previously colored. (Chem. Absts., 1917, p. 1095).

DRP291473-1914

G. Bucky X421

**Preventing Halation in Roentgen Photography.** (Chem. Absts., 1917, p. 1095).

DRP291663-1914

A. Hausleiter 048

**Producing etched ground on Transparent Picture Plates, such as Glass, Celluloid, etc.** By previous processes the production of asphalt copies of large forms has been quite difficult, since the central portions float off or do not copy uniformly. By the present process the negative and the copy are made on the same plate. The picture printed from a line or halftone negative, is developed by a tanning developer and the untanned portions are washed off with hot water. The gelatine is then dyed with a dyestuff which does not permit light to act on the asphalt, which is particularly necessary when the silver deposit is not very thick. Preferably, a dye is formed directly in the gelatine picture, since asphalt is sensitive to the entire visible spectrum. The plate is then coated on the picture side with light-sensitive asphalt, and exposed from the back. The asphalt is thereby rendered insoluble where it is not covered by the gelatine. The asphalt picture is then developed in the usual manner, the gelatine is removed by a solvent, and an easily etched positive asphalt picture is obtained. A 10% hot potash lye is used as solvent, or the plate is etched at once. (Chem. Absts., 1917, p. 1095).

# Monthly **ABSTRACT** Bulletin



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*T. F. Currier,  
Belmont*

# Monthly Abstract Bulletin

Vol. 3, No. 5

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July, 1917

## Erratum

In the *Abstract Bulletin* for June, page 67, line 18, for *stripping* read *striping*.

## Photography

### Effects of Additions to Gelatine Emulsions

B11 ✓

B. J., 1917, p. 274

This article is the commencement of a translation of the section dealing with the subject from Eder's Handbook of Photography.

### Color Sensitizing

A. S. Cory C114 1581

Mot. Pict. News, June, 1917, pp. 3642, 3812, 3968

A review of the literature concerning the production of color sensitive emulsions by means of dyestuffs.

### New Shapes and Sizes of Plates and Photographs

W. S. Coles F2 2651

B. J., 1917, pp. 254, 257

A correspondent protests against the 7 x 11 plate recently introduced by Kodak Ltd., on the ground that it will necessitate a new set of apparatus. The editors think the new 7 x 11 size a desirable one, and point out that plates of this size would fit in a 10 x 12 outfit with new kits.

### The Trade Finishing Business of B. Matthews, Bradford, England

G-J

Phot. Dealer, 1917, p. 162

A very full article describing the business organization and method of handling of this finishing business, which develops about 1000 plates a day and prints upwards of 30,000 post cards. The plates are developed in tanks by a special system enabling very uniform negatives to be obtained and are dried on the machine, after which they are printed on automatic printers which, after the negative has been put in place and the exposure fixed, make 24 bromide prints on one sheet of paper, all the work being carried through on big sheets. A print drying machine is in construction which will deliver the prints dried continuously. The ingenious scheme is to carry the chemicals required for making up solutions on a stand somewhat like a revolving bookcase, thus making it easy to find any chemical. Arrangements are made by which the photographer can obtain prints mailed the same day on which the plates are received, all the business being done for cash. (This article should be read by everybody interested in trade finishing.)

### Scientific Washing of Negatives and Prints

A. W. Warwick G-7

B. J., 1917, p. 261

Amer. Phot., 1917, p. 317

The author covers the same ground as that dealt with by A. V. Elsdon (Cf. this *Bulletin*, May, 1917, p. 49) but has used film negatives instead of fixed plates. He concludes that for safety the film or paper should be washed until the original amount of hypo is reduced to 1/50,000. Washing with five minute soaks, using water equal to ten times the volume of the film, that is, about 3½ oz. for a 2¼ x 3¼ film pack negative, he finds six changes of water required; washing in running water about 35 minutes in a tank washer will eliminate the hypo. For printing papers longer washing is required owing to the absorption of the paper, nine changes of five minutes each or an hour

and a quarter in a tank washer, reducing the hypo to the proportion given. He points out that NC film coated with gelatine on both sides retains at least twice as much hypo as plates and therefore requires somewhat longer washing.

#### Making Duplicate Negatives

G9

Mot. Pict. World, June, 1917, p. 1438

#### Choosing a Printing Paper

C. E. K. Mees J

Camera, 1917, p. 295

#### Making Sepia Toned Prints

C. E. K. Mees J84

Kodakery, June, 1917, p. 20

#### Influence of Potassium Bromide in the Developer on Sulphide Toning of Bromide Prints

N. C. Deck J84

Phot. J. Amer., 1917, p. 280

Writer advocates highly restrained amidol as developer for prints to be toned sepia. Tables give the resulting colors with different development times with both restrained and unrestrained developer. Prolonged development with restrained amidol gives cold sepia tones.

#### Antimony Toning of Development Pictures

L. Strasser J84

Chem. Absts., 1917, p. 1606

By treating a bleached silver with 0.5% soln. of Schlippe's salt a stable red-brown tone is obtained without change of gradation. Simultaneous or subsequent sulfide toning gives a colder brown tone.

NOTE—This is incorrectly described as Antimony toning. The toning action is chiefly due to the sulfur.

#### The Photographic Rendering of Tone Values

C. E. K. Mees 01

Studio Light, May, 1917, p. 6

The first of a series of articles, describing the mechanism of reproducing on paper, glass, etc., the different degrees of brightness of the light and shaded portions of the object to be photographed. This reproduction of tone values constitutes the photographic process; and the author proposes to deal with such matters as the lighting of the subject, the translation of the tone of the subject in making the negative, the effect of exposure and development, the scale of the printing paper, and the translation of the scale of the negative into the scale of the print.

#### Pulverization and Light-Ripening

H. Lüppo-Cramer 012

Chem. Absts., 1917, p. 1370

The silver iodide or bromide film produced by fuming a silver mirror with iodine or bromine vapor appears practically homogeneous in the microscope. Longer treatment with iodine vapor renders it duller, but less so than when exposed to light. No visible image is produced by light if the silver iodide be freed from excess I; it remains latent and can be made visible by treatment with iodine vapor. Two facts may be inferred from this mechanically formed image, pulverization and light-ripening; the pulverized iodine acts in the ripening as a solvent for the silver iodide.

- A Modification of Martens' Density Meter (Polarization Photometer) E. Goldberg 015  
Chem. Absts., 1917, p. 1607

The usual powerful lamp is dispensed with, and a small incandescent lamp is inserted under the photometer table in place of the reflecting prism; the opal glass at the end of the illumination tube is replaced by white paper. An even and much stronger illumination of the negative is produced, and densities as high as 3 can be read easily.

- Colloid Chemistry and Photography Lüpbo-Cramer 017  
Chem. Absts., 1917, p. 1606

The author finds that reduction of silver bromide or silver nitrate in gelatine is accelerated by the addition of a basic dye and that the silver produced is less finely subdivided; for example, if silver nitrate solution in gelatine be treated with hydroquinon developer a reddish yellow or brown silver stain is produced, but the addition of a small amount of pinachrome solution gives a finely divided black silver precipitate. The dyes tried were chiefly the isocyanin dyes used for sensitizing, though a similar effect was found with rhodamine and methyl violet. The acid dyes and some basic dyes tried do not produce the effect.

- How to Make Good Negatives 02  
Kodakery, June, 1917, p. 24

Assuming that the amateur uses the tank method of development, it is recommended for average work to keep the shutter speed constant at 1/25 of a second and vary the lens aperture according to the nature of the subject being photographed, and the weather conditions. Although the table of exposures given is only approximate, the latitude of the Eastman film will take care of any errors involved.

- Some Less Common Defects in Negatives and Their Prevention J. N. Robertson 041  
B. J., 1917, p. 244

Statement of defects found in course of some years' experience and noted down at the time by a practical worker. With films, reversal of the image is ascribed to unsafe dark room light. Bad dust marks are due to the stirring up of the dust in closing and opening the camera, and a warning is given that the inside of the bellows should be wiped. With destruction plates of the film is ascribed to the use of an alum bath between developing and fixing; irregular clear patches to the presence of some dark colored object in front of the lens; small patches of fog to contamination of the fingers with hypo before or during development. Also, finger marks on the back of glass can transfer themselves onto another plate laid against the marked glass. Light and dark bands are due to several causes; light coming at a very oblique angle through the shutter leaves is one cause. Another is leaving a plate containing hypo partly exposed to the air, as, for instance, in a washing tank, where it is not fully covered by the water. It is stated that minute white spots may be produced by dust on the plate combined with fog due to light leaking onto the plate from some other point near the surface of the film, thus giving a shadow of the dust spot.

- Halation on Photographic Plates** E. Goldberg 041  
 Chem. Absts., 1917, p. 1607

Instead of measuring the exposure necessary to produce a definite ring or halo around a point or line of light, G. measures the fog produced on a protected part of the plate surrounded by exposed areas. To avoid the necessities of exact exposures, a simultaneous exposure on the same plate is made through a photographic wedge, and the wedge image compared with the other parts of the plate. A comparative table of antihalation plates and methods shows that the most effective is a red backing between the film and the support.

- Enlargements on Concave or Flat Glass Surfaces** "Chemist" 046/64  
 Phot. J. Amer., 1917, p. 253

Gives collodion emulsion formula suitable for this class of work.

- Photographing Panoramas** 051  
 Kodakery, June, 1917, p. 15

A description of the panoramic Kodak and Circuit camera.

- The Flashlight in Photography** 0581  
 Kodakery, June, 1917, p. 12

An illustrated article, showing by means of prints from motion picture film the different stages of an eye wink caused by igniting a charge of flashpowder, as when taking a flashlight. From the photographs it is seen that the reflex action of the eye occurs about 1/12 of a second after the flash, so that a flashpowder should have a speed not slower than 1/12 of a second. By means of flashlight photographs taken in the dark and in daylight, the cause of the "flashlight stare" is explained, as being due to an abnormal dilation of the eye pupil. Flashlight portraits should therefore be taken with a fairly strong light directed towards the eyes so that the degree of dilation of the pupils will be normal.

- Fire Prevention in Motion Picture Studios** 061  
 Mot. Pict. World, May, 1917, p. 1283

- Difficulties Commonly Met With in Negative Film Development** 0632  
 Mot. Pict. World, June, 1917, p. 1782

- Coloring Film Images with Basic Dyes** A. S. Cory 0645  
 Mot. Pict. News, June, 1917, p. 3488

Instructions for working the Traube process of producing monochrome dye images by means of a mordant image of silver iodide.

- The Safe Storage of Film** 065  
 Motography, May, 1917, p. 1091

An editorial based on the booklet on the subject, published by the Company.

- Something New in Film Printing A. S. Cory 068  
 Mot. Pict. News, May, 1917, p. 3333

A description of a process by A. Harte and F. Taglang for obtaining stereoscopic effects from ordinary cine negative film photographed in the usual way through one lens, by printing the same (apparently by projection) and interposing a line screen over the positive film. It is stated that only negatives of crisp definition and strong contrast will give prints with any suggestion of relief. (The process appears to be an attempt to apply the Ives method of producing parallax stereograms to the production of stereoscopic motion pictures.)

- The Oil-Transfer Process F. T. Coupland ·/89  
 Phot. J., 1917, p. 164

The author describes his own method of working this process. He uses the double transfer paper made for the carbon process, which is sensitized with bichromate and printed under the negative, printing being very rapid. After washing and inking up the image can be transferred in an ordinary copying press.

- Dyes as Sensitizers of Carbon Tissue J. C. Warburg ·/9 ·/82 ✓  
 and Gum Paper  
 Phot. J., 1917, p. 169

A description of the author's experiences in sensitizing gelatine and gum paper with erythrosin according to the method described by Dr. A. A. Meisling, of which a translation recently appeared (B. J., 1917, p. 96).

- A Bathing Process for Lippmann R. E. Liesegang 119 K/1  
 Plates  
 Chem. Absts., 1917, p. 1370

Silver bromide of the necessary fineness for this process can be obtained in the bathing operation only if the silver nitrate entering the potassium bromide gelatine film has a higher concentration than the potassium bromide. Otherwise only coarse-grained silver bromide is produced at the edge.

- An Enlarging Lantern (continued) 2104  
 Amer. Phot., 1917, p. 373  
 Gives detailed instructions for making camera bellows.

- Photographic Print Washing Machine H. Marcelle 257  
 Camera, 1917, p. 308

The water supply passes over an overshot waterwheel which through a crank arm gives a rocking motion to the washing tray.

- A Simple Plate Draining Rack H. F. Hudson 258  
 Phot. Focus, May 2, 1917, p. 304

The rack consists of three upright posts on a baseboard. One of the posts has notches cut in it on the side facing the other two. The distance between the posts is such as to make the plates rest at an angle of about 45°. The plates are dried film down.

- An Instrument for Direct and Rapid Measurement of F Number (Angular) C. Welborne Piper 263  
B. J., 1917, p. 272

Mr. Piper explains the difference between the effective aperture and the angular aperture very clearly and shows how the whole can be measured by simple apparatus and without a determination of the focal length. The article also illustrates another simple instrument for measuring the diameter of the effective aperture.

- ✓ Theory and Technic of Examination of Filmiform Light Filters G. V. Potapenko 266  
Chem. Absts., 1917, p. 1606

An exhaustive discussion of the curves of selective absorption of light by different media and a description of the different methods commonly used for preparing light filters (gelatin, collodion, etc.) An up-to-date bibliography quoting 118 papers is given.

- Some Misconceptions in the Use of Light Filters in Multiple 2661  
B. J., 1917, p. 271

A review of the article by W. Hood, published in *Camera Craft*. (See *Abstract Bulletin*, June, p. 72.) The errors made by Mr. Hood are pointed out and some suggestions are made as to the cause of his misunderstanding.

- Mr. C. F. Inston, a leading figure in English photographic life, died on May 4. Mr. Inston was a very well-known amateur photographer and was a leading spirit in photographic societies. The last article which he wrote was recently published by Kodak Ltd.  
B. J., 1917, p. 248

- On May 12, Lieutenant Commander Sladen, chief officer of the London Fire Brigade visited the Kodak Fire Brigade at Harrow, and accorded high praise to their efficiency.  
B. J., 1917, p. 265

- A Photographic Bibliography A. S. Cory  
Mot. Pict. News, May, 1917, p. 3332

## Photo-Engraving

- Photo-Engraving in War Time 07  
Photo-Engravers' Bulletin, May, 1917, p. 11

An account of the restrictions upon photo-engraving in England at present, chiefly due to the scarcity of labor and copper.

**Why Printing Inks Fade**

J. H. Smith

American Printer, May 20, 1917, p. 8

Gives the conditions under which the greatest permanence may be obtained.

## Physics

**Fluorescence and Phosphorescence and their use  
to produce Luminous Effects**

F. H. Glew, et al. ✓

Ill. Eng., 1917, p. 72

This discussion comes at a time when intensifying screens for x-ray photography are of particular interest. Many interesting points are introduced concerning the production and use of these effects. The difficulties of photometrically measuring luminescent substances are discussed and means suggested to overcome these difficulties.

**The Color Temperature of Illuminating Gas Flames**

E. F. Kingsbury

J. Frank. Inst., June, 1917, p. 781

The chief item of interest in this paper is a table giving the color temperature values of various types of gas flames.

**Improvement in Hot-Wire Anemometers**

J. Frank. Inst., June, 1917, p. 783

The author describes an automatically compensated hot wire anemometer which requires no correction for ambient temperature. The fourth powers of the current supplied to the bridge for balance are directly proportional to the wind velocities.

**A New Visibility Equation Derived from the Ives and  
Kingsbury New Luminosity Equation**

P. D. Foote

J. Acad. Sci. Wash., 1917, p. 317

**A Survey of the Automobile Headlight Situation**

W. F. Little

Trans. I. E. S., 1917, p. 123

A complete study both from a scientific and practical standpoint. The difficulties of any complete solution of the problem of eliminating glare are pointed out. A symposium is given containing the views of prominent experts.

**Present Practice in Automobile Headlighting**

S. C. Rogers

Trans. I. E. S., 1917, p. 158

A presentation of the problem of Automobile Headlighting similar to the preceding survey by W. F. Little.

**Emissive Power of Tungsten****E. O. Hulburt****Astrophys. J., 1917, p. 149**

Emissive power is defined as the ratio of energy emitted to that from a black body at the same temperature. The author, making use of a sodium photo-electric cell, finds for tungsten the relation connecting its emissive power with its temperature and the wave-length, from which the spectral energy distribution curve for tungsten at any temperature from 1746° to 2785° can be calculated.

**Some Properties and Applications of Selenium****E. E. Fournier D'Albe****Jour. Röntgen Soc., 1917, p. 38**

A popular lecture. Some possible applications in photography are mentioned, as the operation of automatic shutters in cameras, phototelegraphy, the recording and reproducing of sounds in synchronism with motion pictures, etc.

**A Spectroscopic Investigation of some Sources of Ultra-Violet Radiation in Relation to Treatment by Ultra-Violet Rays****C. A. Schunck****Jour. Röntgen Soc., 1917, p. 25**

Shows comparative photographs on Wratten panchromatic plates of arc and spark spectra of metallic electrodes of tungsten, molybdenum, iron and uranium, and carbon rods cored or impregnated with oxides of these and other metals. Tungsten metallic electrodes give the most intense ultra-violet radiations.

**Contribution to the Study of the L Series of the Elements of High Atomic Weight****R. L. Lebard and A. Dauvillier****Comp. Rend., 1917, p. 687**

The wavelengths of nine lines of the L series of tungsten, iridium, platinum and gold were measured and found to follow the Moseley relation.

**The Focal Variator****A. P. Weiss****J. Exper. Psychology, 1917, p. 106**

The apparatus, as described from three illustrations, is a system of lenses related to each other in such a way that a visual stimulus may be projected on a ground glass in any degree of clearness and so that the degree of clearness can be accurately measured. The author gives the following as some of the problems suitable for the apparatus: Relative legibility of handwriting, type faces and forms, diacritical marks, symbols, visual signals and the analysis of factors which make the different parts of a visual complex (such as a picture) of unequal attentive or affective value. This last problem would be useful in a research on advertising.

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**General and Inorganic Chemistry****Plastic Cements****J. B. Barnett****J. Soc. Chem. Ind., 1917, p. 442****Brass World, 1917, p. 146**

The nature and applications of plastic cements is discussed. The cements are divided into twelve classes: 1 plaster of Paris, 2 hydraulic cement, 3 clay, 4 lime, 5 asphalt or pitch, 6 rosin, 7 rubber, 8 linseed oil, 9 casein and albumen, 10 silicate of soda and oxychloride cement, 11 flour and starch, 12 miscellaneous. Formulae are given.

Some Puzzling Equations with Which the Plater  
Must Contend E. S. Thompson

Brass World, 1917, p. 139

A crude attempt to introduce electricity, which the author designates as "E" into chemical equations. "E" is considered as an element with the power of combining with other elements, though it cannot be held in such a state.

A Note on Silicon-Coated Metal W. E. Vawter  
J. Ind. Eng. Chem., 1917, p. 580

An attempt to coat iron with an acid-resisting coat of silicon. The experiments were failures.

New Alloys to Replace Platinum F. A. Fahrenwald  
J. Ind. Eng. Chem., 1917, p. 590

A series of alloys comprised of platinum, palladium and gold in varying amounts. Results given show these alloys to be as good as (in some cases better than) platinum. Cannot be used for hot concentrated nitric acid nor for anodes. The paper is prefaced with a discussion of some of the laws governing the formation of alloys.

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## Analytical Chemistry

Interpretation of Coal Analysis E. G. Bailey  
Analyst, 1917, p. 145

The clinkering properties of coal may be either due to the sulphur or iron content or both. The percentage of volatile matter in coal is not a true measure of the value of coal, for much depends on the nature of the volatile matter and how much of it is combustible. The percentage of moisture is also considered but the difficulty of determining free water and water of composition is not mentioned.

Inclusions in Silver Voltameter Deposits M. M. Bovard and G. A. Hulett  
and the Electrochemical Equivalent of Silver  
J. Amer. Chem. Soc., 1917, p. 1077

The agreement between the amount of silver deposited at the cathode and dissolved at the anode has been determined more accurately than by previous investigators. With the improved Hulett apparatus the authors determine the inclusions in the silver deposit directly with an accuracy of one part in a hundred thousand.

The Contamination of Precipitates in Gravimetric Analysis G. M. Smith  
J. Amer. Chem. Soc., 1917, p. 1152

Barium sulphate, when precipitated in solutions containing ferric iron, carries down ferric iron in the form of a hydrated complex sulphato-ferrate of barium.

## Colloid Chemistry

### Some Theoretical Aspects of Electrical Fume Precipitation

W. W. Strong

Met. Chem. Eng., June 1, 1917, p. 648

A "fume" is a disperse system of solid or semi-solid particles in a gas and may vary in state of subdivision from microscopic to colloidal dimensions. The electrical precipitation of these is paralleled by electrical coagulation of suspension colloids in liquids, and the process follows much the same course:—(a) The formation of ions, (b) adsorption of ions to the "fume" particles, charging these, (c) the driving of the "fume" ions to the passive electrode, (d) collection of the fume at this. The chief differences depend electrically upon the very high voltages required to ionize the gas, physically upon the low viscosity in the gaseous system and the consequent occurrence of well-marked regional discontinuities and instabilities of motion, as eddies. These phenomena are treated diagrammatically while the dependence of the precipitation upon the ionization is dealt with mathematically.

### A Contribution to the Theory of Emulsification Based on Pharmaceutical Practice J. Ind. Eng. Chem., 1917, p. 156

L. Roon and R. E. Oesper

The emulsions considered in this communication are the typical oil in water emulsions of pharmacy. Such emulsions consist of (1) an oil, forming an internal phase, (2) an emulsifying agent or emulgent, (3) water. The emulsifying agents most generally used are gum arabic (acacia), gum tragacanth, Irish moss, dextrin, gelatin, malt extract, yolk of egg. Of these, gum arabic (acacia) is the best. The experimental method investigated was that of forming a nuclear emulsion with certain definite proportions of oil, gum and water. This nucleus may then be diluted with any quantity of water to form a good emulsion. It is shown that (1) definite critical points of emulsification exist, (2) these critical points depend on (a) the quantities of internal phase and of emulgent, (b) the nature of the internal phase and of emulgent, (c) the procedure in emulsification, (3) Fischer's hydration theory, which requires that the emulgent be a hydrophilous colloid, has been sustained, in part. (4) Preparation of nuclear emulsions for subsequent dilution gives the best results, (5) Nuclei of one composition act as stabilizers for incomplete emulsions of other compositions, (6) Nuclei of one composition act as emulgents for other internal phases.

### Emulsification of Mineral Lubricating Oils, Apparatus and Test Method

P. H. Conradson

J. Ind. Eng. Chem., 1917, p. 166

## Organic Chemistry

### The Chemistry of Wood

A. W. Schorger 1411

J. Ind. Eng. Chem., 1917, pp. 556, 551

Part I deals with the analysis of some American species of wood, several interesting points being brought out. The occurrence of methyl alcohol and acetic acid in

wood distillate is ascribed to the presence of methoxy and acetoxy groups in the lignocelluloses. The question is left open whether lignins and cutin are chemically or physically combined with cellulose in lignocellulose. An important further difference between lignocellulose from wood and cellulose from cotton is the behavior on boiling with 12% hydrochloric acid; 6 to 17% of furfural is obtainable from wood cellulose, yet only a trace from cotton cellulose. Methods and results are given for the solubility in cold water, hot water, alkali (1% caustic soda) and ether; the content of ash moisture, volatile oil, wax and resinous substances, pentosan and methyl pentosan, acetoxy and methoxyl, both in the lignocellulose and cellulose prepared from it. In Part II the analytical methods and their results are discussed. The author defines cellulose as the residual product after successive alternate treatments with chlorine and sodium sulphite up to the point Mäule's reaction ceases. This reaction depends upon the red color developed by lignins on adding ammonia to wood successively treated with permanganate and hydrochloric acid. It is shown that conifers contain a slightly higher percentage of cellulose than the hardwoods.

Influence of Humidity on the Physical Constants of Paper O. Kress and P. Silverstein 1412

J. Soc. Chem. Ind., 1917, p. 449

A study of the effects of humidity on the strength, stretch and folding of papers. It is pointed out that much more uniform results would be obtained if a standard humidity were observed.

Mould Fungi Causing Deterioration of Paper P. Sée 1412

J. Soc. Chem. Ind., 1917, p. 419

Paper is very susceptible, in a damp atmosphere, to attack by mould fungi. The spores probably preëxist in the raw material used in making the paper. The number of species is strictly limited. Many of them produce stain.

The Action of Acetic Acid on Aluminum R. Seligman and P. Williams 1511

J. Soc. Chem. Ind., 1917, p. 409

In a previous communication (cf. this *Bulletin*, Apr., 1916, p. 12) the action of concentrated acetic acid was studied; the present paper deals with dilute acetic acid. With hot acid it is found that the rate of solution of aluminum increases with fall of concentration of acid down to 1%. Dilute acid containing dissolved aluminum corrodes the metal more rapidly than pure acid of the same strength. Strange to say, distillation of such acid does not reduce the activity to the original value. It is thus essential, in practice, to design aluminum apparatus so as to avoid the formation of pockets and eddies; further, such apparatus lasts longer if frequently cleaned. Cold acetic acid attacks aluminum only slowly; it is shown that oxygen increases the rate of attack. Vessels must therefore be washed and dried as soon as possible after removal of their contents. In many cases it is found that the presence of small amounts of salts such as sodium chloride and sulphate greatly accelerate corrosion.

Synthetic Manufacture of Acetic Acid from Acetylene A. D. 1511  
Caoutchouc, 1917, p. 9200

New Cellulose Acetate 1513  
Caoutchouc, 1917, p. 9177

The Usines du Rhône are manufacturing a new type of acetate produced by the action of acetic anhydride upon cellulose in presence of trioxymethylene.

- ✓ The Solvents of Cellulose Acetates A. Dubosc 1516-1513  
Caoutchouc, 1917, p. 9197

First installment of a series. The difficulty of forming general rules on solubility of cellulose acetates is emphasized, the irregularities being even greater than with nitrocelluloses. The effect of the degree of hydrolysis is mentioned, also the contrast in behavior of allied substances, such as tetrachloroethane and pentachloroethane, and chloroform and carbon tetrachloride. The acetates of all alcohols are either solvents or softeners; this is discussed in more detail. The author promises a classification of solvents and softeners, taking up in turn the alcohols, ethers and esters, ketones, aldehydes, acids, amides, nitro compounds, chlorine compounds, hydrocarbons and essential oils.

- The Cheap Production of Alcohol A. M. Breckler  
J. Ind. Eng. Chem., 1917, p. 612

It is predicted that the price of grain alcohol will be over fifty cents per proof gallon during the present year, so that it will become increasingly necessary to find some other source. Molasses residues, wood waste, and sulphite liquors are discussed; the first is not available in sufficient quantity, the others involve many difficulties. The author analyzes the cost of water, fuel, and raw material, and emphasizes the necessity of careful cost accounting in experimental plants, lest capital be scared off by the failure of too great promises.

- On the Synthesis of Caoutchouc A. D.  
Caoutchouc, 1917, p. 9197

## Patent Abstracts

### U. S. Patents

- 1226341 W. G. Lindsay, Assigned to The Celluloid Co. B122-1613

A Process of Making a Plastic Compound suitable for a photographic film base. Acetyl-cellulose of the acetone-soluble type is mixed with benzol, methyl alcohol and a small amount of water to produce a gelatinous mass. Paraethyltoluolsulfonamid may also be added.

- 1226342 W. G. Lindsay, Assigned to The Celluloid Co. B122-1613

A Process for Making a Composition suitable for film base which consists in mixing acetone-soluble acetyl cellulose with paraethyltoluolsulfonamid and adding triphenylphosphate, methyl acetate and methyl alcohol.

- 1226343 W. G. Lindsay, Assigned to The Celluloid Co. B122-1613

The Process of Making a Film Base Compound which consists in mixing acetyl cellulose with an alkylated aromatic sulfonamid, triphenylphosphate, epichlorhydrin and methyl alcohol.

- 1225146 G. W. Leighton and C. S. Babcock C1312/74

A Coating Material for a Printing Paper which is manipulated in a way similar to platinotype. It includes ferric oxalate, oxalic acid and salts of silver and mercury.

1224984 S. H. Weinhandler and J. S. Sinsohn G7

A Process of Eliminating Hypo, electrolytic sodium hypochlorite being used, which is strongly alkaline in order rapidly to open the pores of the gelatine.

1224442 P. D. Brewster K/42

A Process of Making Colored Photographic Prints in which two gelatine complementary-color films are made on the usual bases such as glass or celluloid. One of these films is treated in a bath to toughen and loosen it from its base. It is then cemented upon the complementary film in register. The upper base is then stripped off. The combined print is then toughened and stripped from the lower base and transferred to a suitable support.

1225246 H. Hess, Assigned to Hess-Ives Corporation K/45

A Process for Reproducing Colored Transparencies. Three color separation negatives are made by contact printing, using appropriate filters. From these, corresponding positives in complementary colors are produced and assembled in the usual way.

1226135 R. V. Stambaugh, Assigned to Artfilm Studios 062

The Process of Making Motion Picture Films of the animated cartoon type. The pictures are printed by contact while the titles are simultaneously printed by optical projection.

1225729 J. H. Fullmer and R. W. Runser 07005

Another one of the Huebner-Bleistein series of patents. This covers a printing machine for making the prints on to sensitized metal, so that register is not disturbed and manipulation is easy.

1225447 A. C. Murray 07007

A Method of "Staging" Half-Tone Work when re-etching by putting paraffin wax on the heated plate and wiping it away from those parts which require further etching.

NOTE—This is only suitable for coarse or wash drawings, and it is well known in the trade: some etchers using an ordinary candle to provide the wax resist.

1224328 G. W. Scritsmier 089

A Mechanically Produced Negative consisting of a celluloid base coated with a mixture of beeswax and paraffin over which is a layer of a waxy ink. When this is written upon in a typewriter, the ink is displaced by the type, leaving transparent letters or figures in the wax.

1226339 W. G. Lindsay, Assigned to The Celluloid Co. 1613

A Solvent for Acetyl Cellulose composed of benzol, methyl alcohol and a small amount of water.

1226340 W. G. Lindsay, Assigned to The Celluloid Co. 1613

A Solvent for Acetyl Cellulose comprising epichlorhydrin and methyl or ethyl alcohol. Paraethyltoluolsulfonamid and triphenylphosphate may be added.

1224300 C. A. Hoyt 2152

A Device for Preventing Double Exposure. The arrangement maintains the shutter inoperative, after making an exposure, until a fresh section of film is wound into place. A signal device also appropriately shows the words "exposed" or "unexposed."

1224531 W. S. Goldwire and J. F. Patton, 2152  
Assigned 1/3 to W. R. Bedingfield

A Roll Film Camera provided with spring motor mechanism for quickly and automatically winding up a fresh section of film after each exposure. The winding operation is stopped at the proper point when one of a series of spaced perforations in the edge of the film co-acts with a detent finger which controls the spring motor.

1225757 G. W. Bretz 2152

An Attachment for Cameras to enable titles or other writing to be light printed upon the negative. The operator writes upon a ground glass strip which is inserted in the camera. Upon turning the operating key, the strip is moved against the film and a brief exposure made by opening a window, the film being protected and the window being covered at all other times.

1224588 H. C. Wray 2153

A Camera Attachment for automatically printing identification marks upon roll film negatives. Transparent discs carrying opaque clock hands are rotatably mounted near the border of the picture area and are so connected with the shutter release that they will be partially rotated each time an exposure is made.

1225951 H. Le B. Gray, Assigned to E. K. Co. 2153-2653

A Photographic Film Cartridge in which the sensitive film is associated with a backing paper of semi-translucent material, along the edge of which are opaque numerals corresponding to the successive exposure areas. Between the film and backing is a carbon paper that is cut away opposite the numerals so as to be slightly narrower than the film. When this film is used in a camera provided with a window in the back, through which the usual writing may be done with a stylus, the numerals will be light printed on the edge of the film automatically.

1225803 J. S. Greene, Assigned to Comercial Camera Co. 2172

A Developing Apparatus for use in commercial copying cameras of the type which employ rolls of sensitive paper. The exposed strip of paper is moved downwardly by rolls and guided by a curved track underneath the developer. After it is severed from the strip, the exposed portion is moved forward in the developer by rotating paddles which also stir the developer. After development is completed, a gate is moved out of the way and paddles move the paper rearwardly up inclined guides, enabling the paper to be drawn between squeezeing rolls and deposited in the hypo.

1223752 A. H. Adams, Assigned by Mesne Assignments to 2231  
Western Electric Co., Inc.

A Projecting Incandescent Lamp, the globe of which is coated with a mirror throughout its whole area, except for a small opening corresponding in size to the effective area of the condenser in the projecting system. The globe is made in the shape of opposing paraboloids of different focal length.

1224663 A. L. Patterson, Assigned to Bausch & Lomb Optical Co. 2231

A Projection Apparatus which includes a concentrated filament lamp and a special system of reflectors which co-act alternatively with a transparent projection system and an opaque projection system.

1224392 F. A. Loftus 2235

A Projecting Device adapted to be inserted in the slide carrier of an ordinary lantern. By changing suitable transparencies, the progress of a baseball game is projected on the screen.

1226176 C. H. Bierbaum 2235

A Slide-Shifting Device for Projection Apparatus so arranged that the changing of slides is controlled by the lecturer through a pneumatic release and the attendant merely changes the slides in the holder.

1226177 D. U. Billings 2235

A Projecting Device for displaying a series of advertising slides automatically, the slides being carried on an endless belt which is intermittently actuated.

1225261 D. C. McCandless 232

A Flash-Light Apparatus adapted to give fire-light effects. It consists of two special flash cabinets, one of which is inserted in a fire-place and the other of which is placed to light the subject diffusely to soften it. The flashes are electrically ignited in timed relation with electro magnetic actuations of the camera shutter.

1225957 E. H. Hollister 242

A Printing Frame provided with a sliding clamp along one edge which co-operates with a curved spring member to hold the negative film and mask in adjusted position.

1225652 T. Kruger 2626

An Electro Magnetic Shutter Actuator which enables the operator to make an exposure while he is a considerable distance from the camera.

1225039 A. Kiss 2652

A Magazine Plate Holder for revolving back cameras. The plates are loaded into septa and piled in the septum box. The slide of the box is pulled out preparatory to exposing the front plate and when said slide is pushed back to close the carrier after an exposure is made, it pushes the exposed front plate and its septum through a slot into a receiving case. The apparatus is mounted to permit the revolving back to be used.

1225988 B. H. Meyering, Assigned to E. K. Co. 2653

A Film Cartridge in which the film is associated with an opaque backing paper through which perforated numerals are punched or stenciled at intervals corresponding to the edges of the successive picture areas of the film. Between the stenciled numerals and the film there is located a translucent sheet of paper to prevent halation and temper the light. This may be red translucent paper in the form of separate patches beneath the numerals, or in the form of a continuous strip co-extensive with the film. It is used in cameras having a window in the back.

1224500 R. H. Pietzsch, Assigned to Sino Camera Co. 319

A Motion Picture Apparatus in which the picture units are arranged in transverse rows on the film, the kinetographic series thus zigzagging upwardly throughout the film. The film is provided with opaque ends, one of which contains a roughened transparent window for focusing.

1223577 P. R. Gonsky, Assigned to Endlessgraph Mfg. Co. 320

A Stand for Motion Picture Projectors provided with a screw-threaded spindle for raising and lowering it.

1224079 J. F. Davidson 3201

An Intermittent Mechanical Movement designed for operating the film sprockets of motion picture machines.

1225151 A. Mehlfelder 3201

An Intermittent Drive for Motion Picture Projectors in which a modified driving worm actuates a gear provided with driving studs. The arrangement is such that the relative motions of the driving and driven parts may be altered during operation to correct the framing of the picture.

1225184 M. Segel, Assigned to E. M. Ubelmesser 3201

A Self-Threading Device for Motion Picture Apparatus in the use of which the lead end of the film is connected with the upper sprocket. Further operation of the machine moves this film end through curved guides past the gate and lower sprocket and into engagement with an automatic clip upon the lower take-up reel.

1225222 A. D. Covert 3208

A Governing Device for the Take-Up Reels Motion Picture Machines. The take-up reel increases in speed as the machine is speeded until a critical point is reached. No increase occurs thereafter, but instead the velocity of the reel is progressively decreased to compensate for the increasing diameter of the film which is wound thereon.

1223771 O. B. Day 3209

A Signaling Device for Motion Picture Projectors. The arrangement rings an electric bell when a small strip of tinfoil located on the edge of the film at an appropriate point passes over two contacts.

1225801 J. Grant 3209

A Motion Picture Projector provided with a fire shutter that automatically closes when the machine is stopped. It is frictionally actuated from the crank shaft.

1225905 D. P. Whitesell 3209

A Device for Winding Motion Picture Film so that rewinding will be unnecessary. The film is coiled in its container from the outside inwardly, there being automatic means for increasing the speed of the container as the film convolutions grow smaller and smaller.

1225636 C. F. Jenkins 321

A Motion Picture Projector in which the shutter is located between the film and condenser in "free cooling air." A prism reflects the light through a lateral lens onto a screen at right angles to the plane of the film to avoid interference by film rolls.

1224304 W. A. King, Assigned  $\frac{1}{2}$  to W. Clemons 322

A Motion Picture Projection Apparatus in which the film is moved continuously and the pictures on the screen held stationary by means of appropriately moved mirrors in the projection system. These mirrors are pivotally mounted on an endless carrier and are suitably rocked by rollers traveling over cams.

1225392 L. Arkin and S. Adelman 329

A Toy Motion Picture Apparatus of the book-leaf type.

1225335 A. S. Howell, Assigned to Bell & Howell Co. 34

A Motion Picture Contact Printing Apparatus provided with several control mechanisms. The negative film is provided at appropriate places with notches in its edges, which permit an electric circuit to be closed, thereby stopping the machine, relieving the pressure which holds the negative and positive films in contact and automatically shifting an index card to tell the operator how the printing light should be altered and what the name is of the next scene. The shutter is provided in its opaque section with a ruby window, which automatically comes opposite the film window when the machine is stopped, so that the operator may make an inspection without fogging the film. A special light controlling diaphragm is provided consisting of two oppositely driven perforated slides controlled by two racks and a common pinion. A shift in the driving mechanism enables the quick rewind of the negative film.

1223539 M. Vandal 383

A Machine for Cutting Stencils for the mechanical coloring of films. The operator does not move the knife directly in contact with the film, but operates a pantographic pointer over a projected image of the film, the pantograph being connected with the knife.

1225270 E. R. Pearson and C. E. Jones 387

A Machine for Lubricating the Edges of Motion Picture Film. A thin film of lubricant is withdrawn from the supply tank on the peripheries on two feed rolls and is taken up therefrom by two narrow applying rolls which touch against the edges of the film.

1223459 G. C. Whitney

Apparatus for Producing Colored Light Effects. Selected amounts of light from colored sources are projected through lenses onto a ground glass screen, from whence the mixed light is thrown by a projecting lens onto the object to be illuminated.

## British Patents

B102280

F. W. Donisthorpe K31

Improvement in and Relating to Color Cinematography. Arrangement for enabling half-size motion pictures to be made by dividing each picture on the film vertically into two, especially for two color work. When this is done the picture is higher than it is long, which is unsatisfactory, and in order to avoid this, each picture area has been divided into four, which means extremely small pictures and also in some machines the film has been passed horizontally through the projector, but this prevents the standard projector from being used. This patent enables a vertically divided picture to be used by rotating the picture through an angle of  $90^\circ$  optically in the process of projection onto the screen so that without changing the standard projector the picture appears the correct way up on the screen. Arrangements of prisms for doing this are described.

B105380

C. F. Jones K/41

Two-Color Photography. From the red filter negative a positive is printed and toned blue, which is then sensitized in bichromate and printed under a positive made from the green filter negative dyed up with a red pinatype dye, the process thus being a combination of the blue toning and pinatype processes in making the positives.

B104742

J. P. Ferrier and T. J. Peters 045

Improvements in Stereopticon Plates and Slides and Processes of Making the Same. Formula for a varnish intended for coating glass plates so that written or printed matter can be mechanically transferred to the varnish is given, consisting of 95% celluloid varnish and 5% white shellac.

B104575

J. Drysdale 067

Anti-Flickering Device for Use in Connection with Cinematography. A fan-shaped sheet of cardboard or the like with vertical bars, intended to be moved horizontally before the eyes of the viewer of cine images, it being alleged that this additional flicker will counteract that of the images upon the screen.

B103782

T. J. Mills and E. T. Morris 0713

An Improved Machine for Preparing Grinding and Polishing Intaglio Printing and other Cylinders.

B105012

W. J. Mellersh-Jackson 0722-216

Improvements in or Relating to Photographic Apparatus. Camera arranged for reproducing subjects in pre-determined positions of a sensitive material in which the sensitized surface is adjustable relative to the camera by special mechanism, and in which, also, the subject holder is adjustable, the whole being interconnected with gearing to form a camera suitable for the Huebner-Bleistein system, in which a number of duplicate pictures are obtained in exact relation to each other for the photo-lithographic process.

B104663

L. Dreyfus 1212

Improvements Relating to Cinematographic Films or Bands. A cine band with reinforced edges having elevations and depressions corresponding with the carrying teeth of the winding wheel. These projections not only strengthen the band but protect the picture surface when the film is wound in coil.

B103951 E. H. Alvord 1412

Improvement in Presses for Paper and Like Pulp. Pulp press with presser rolls and a novel form of throat for receiving the discharge therefrom.

B15365-1913 Akt. f. Chem. Prod. 1421

Improvements in or Relating to Methods for Finely Dividing Gelatinizing Substances. A method of granulating gelatine by introducing a warm solution thereof into certain liquids and thereafter removing and washing the solidified particles. One of the advantages of this process is the fact that the colloid is dried far more rapidly than when it is produced in the shape of sheets or shreds; the danger of decomposition being thereby diminished.

B100073 Akt. f. Chem. Prod. 1421

Improvements in or Relating to Methods for Finely Dividing Gelatinizing Substances. See British patent 15365-1915.

B103877 H. E. Macadam and H. Walker 1511

Improvements Relating to Apparatus for the Manufacture of Sulphuric Acid. Form of the Glover tower for the making of sulphuric acid with atomizing sprays for the sodium nitrate solution.

B105365 J. M. F. Pons and A. M. y Perez 2109

An Attachment to be fitted to the back of an ordinary camera for the production of multiple exposures on a single plate. The necessary screen is carried in a frame movable by means of a screw.

B103510 G. F. Cooke 221

Apparatus for Writing and Projecting the Writing onto a Screen. Apparatus for projecting typewritten script upon a screen whilst it is being formed.

B104517 H. R. Evans 2231

Improvements in or Relating to the Projection of a Light Beam. Reflector for Projecting Lamp. A casing which presents an interior reflecting surface which is optically a closed sphere except for a projection aperture used in combination with a source of light at the center of the sphere.

B104613 F. W. Norton 257

An Improved Method of Developing, Fixing and Washing a Number of Photographic Prints Simultaneously. Device for developing a number of photographic prints in which carriers preliminarily wetted are formed into a pack, thereafter immersed in the tank containing the developer in which air, under pressure, is forced edgewise of the pack. The number of the original American application is given as 1074572, but the British Patent was not taken out under the Convention.

B15377-1915 W. Taylor 263

Improvements in Machines for Grinding Glass. A new machine for grinding spherical surfaces on discs of glass in lens work.

B103389 W. J. Travis 263

Improvements in Lens Grinding Machinery. Lens grinding machine, the novel feature of which is the oscillating motion of the cylindrical grinding bed.

B105083 H. B. Cuthbert 2653

Improvements in or Relating to Photographic Roll Films. A method of marking diagonal lines or numbers upon film backing paper in such wise that the exact position of any particular film section can be determined by inspection through the sight hole.

B104501 N. A. Pyke 2833

Living Portrait Photographs. The invention consists in a mount for production of the moving portrait effect by the movement of a thin, flexible, ruled screen over a banded multiple print. The special object is to provide good contact between the screen and print and for this purpose a springy packing such as cotton or corrugated paper is inserted.

B104625 P. G. Palmer 3203

Improvements in or Relating to Shutters for Cinematograph Projectors, Cameras and Printing Apparatus. A shutter for cinematograph projection in which there are narrow slots in the opaque portions.

B104711 C. J. Bebbington 324

Improved Screen to Enable Cinematograph and like Pictures to be Viewed in the Daylight. Projection Screens: Screen for projection in daylight consisting of a sheet of transparent or translucent material faced with a layer of a dull, blue colored material, such as a matte surface sheet of blue colored celluloid. The picture is projected through the blue side and is viewed by the audience on the other side of the screen.

## German Patents

DRP292723-1915 G. W. A. Sosna and J. E. Biedebach G5-11

Photographic Plates, Films, Paper, etc., with Coloring which Reduces the Sensitiveness to Light. Addition to 288328. The plates are rendered non-sensitive to subdued daylight during development. In addition to the filter dyes, chemicals, such as phenolphthalein, are incorporated in the emulsion, which is not affected thereby, so that a color is generated in the emulsion by the action of the alkali of the developer. Modifications are specified.—Chem. Absts., 1917, p. 1371.

DRP293004-1914 C. Schleussner, Akt. Ges. K/33

Polychrome Screens for Color Photography. The principal difficulty in the processes of this kind has been, heretofore, in preventing the formation and persistence of holes between the colored granules of the colloidal coating. According to the present invention, neither a pre-treatment of the granules, nor an after treatment of the plate, nor an intermediate layer of adhesive to secure the granules to their carrier,

is necessary. The process consists in applying the dry colloidal particles directly to the carrier and insuring a faultless contact of the particles with each other and their direct union with the carrier, by means of the vapors of a softening agent. Glycerol is used in connection with this treatment, to destroy the cohesion of the colored granules during the treatment with vapor. E. g., the dye vehicle, vegetable glue or other colloid, is dyed wet with the three colors, red, blue and green. The dyed colloid is then dried, comminuted, and sifted to the finest degree. After the colored particles have been mixed in the proper proportions, they are dusted on a carrier (glass, film, or the like). A very thin film of glycerol is applied to the carrier, preferably by mixing 2 cc. glycerol with 12 cc. acetic acid, pouring this upon the carrier, whereupon after evaporating the acetic acid a small amount of glycerol remains, which destroys the cohesion of the screen granules. The dusting can be effected in a box. The screen elements are then uniformly distributed over the surface of the plate by means of a very soft brush, and the excess elements are removed by dusting them off. Steam is now conducted over the plate prepared in this manner, whereby the colloid particles are liquefied and flow together in a continuous, faultless film, absorb the glycerol, and are secured firmly to the film. No further treatment is necessary. Alcohol vapor may be employed instead of steam.—Chem. Absts., 1917, p. 1372.



# Monthly **ABSTRACT** Bulletin



August, 1917

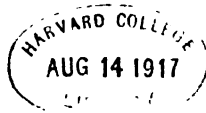
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# Monthly Abstract Bulletin

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August, 1917



*S. F. Garrison*

## Photography

### Effect of Additions to Gelatine Emulsion

C11 ✓

B. J., 1917, p. 300

Conclusion of series commencing on p. 274.

### Additions to Emulsion

W. E. Debenham C11

B. J., 1917, p. 319

In connection with the publication of the translation from Eder on this subject, Mr. Debenham stated that in order to avoid green fog he has added perchloric acid to the silver solution before mixing and also formic acid to the bromide.

### Home-made Transparency Plates

W. E. Debenham C112

B. J., 1917, p. 289

Description of method of making emulsion and coating plates for transparency work.

### Methods of Determining Exposure

F5

Mot. Pict. World, June, 1917, p. 2094

July, 1917, pp. 98, 238

### Tank Plate Markings

A. O. Forrest G4 041

B. J., 1917, p. 291

The only defects observed in six years' use of tanks for plates are streaks of uneven intensity due to insufficient movement of the developing solution and scum-like markings on the edges, which are due to loading the plates into the rack before its grooves are perfectly dry.

### Intensifying Negatives

C. E. K. Mees H2

Kodakery, July, 1917, p. 21

### Warm Tones Direct in Development

J83

Fotografen, April, 1917, p. 16

Mr. Brinchmann, of Kristiania, recommends for obtaining platinum brown tones on E and AE Kodura paper the following developing formula :

<b>A</b>	Hydrochinon,	-	-	-	10 gm.
	Sodium Sulphite, (Crystals)	-	-	-	80 gm.
	Water,	-	-	-	500 cc.
<b>B</b>	Potassium Carbonate,	-	-	-	60 gm.
	Water,	-	-	-	500 cc.

For use take 25 cc. A, 25 cc. B, 20 cc. water and add 4 drops of 10% potassium bromide solution. This formula has been tried in the Laboratory with Artura but no satisfactory results could be obtained.

### A Bibliography for Color Photography

A. S. Cory K

Mot. Pict. News, July, 1917, p. 298

- Color Vision and Color Photography C. W. Piper K1  
B. J. Color Supplement, 1917, p. 21

- Color Sensitizing A. S. Cory KC 1212 1681  
Mot. Pict. News, June, 1917, pp. 3812, 3968, 4131

A continuation of previous articles on the subject.

- Decennia Practica—Color Photography K/41 K/3  
B. J. Color Supplement, 1917, p. 23

Deals with color transparencies, especially those made by the Pinatype process, and screen plate color processes.

- Mounting on Metal N1  
Studio Light, June, 1917, p. 20

Prints may be mounted on metal either with the aid of a strong solution of shellac in alcohol, or with Kodak dry mounting tissue. In the latter case it is necessary to insure that the metal is free from grease, and that it is heated to a temperature approaching the softening point of the tissue before mounting.

- The Action of X-Ray on J. Reimer and W. D. Witherbee XF5  
Plate, Pastille, and Skin  
Amer. Jour. of Roentgenology, June, 1917, p. 302

Some rather useful formulæ are given for the calculation of x-ray exposures, in x-ray photography and treatment work.

- Phenomena of Ripening R. E. Liesegang 012  
Chem. Abst., 1917, p. 1796

The "Ostwald" ripening, which depends on an intermediate stage in which the smaller particles are dissolved, does not take place in a coagulated gelatin film. Other kinds of ripening must, therefore, exist.

- An Effect of Light on Paper R. E. Liesegang 012  
Chem. Abst., 1917, p. 1796

Pure paper is light-sensitive as well as paper containing wood pulp. The latent light-image shows brown when treated with pyrogallol and soda, and the developability is accompanied by an ozonization on the exposed areas. The active agent is the gum used in the sizing; with unsized paper no effect is produced.

- Photo-Inversion H. Saegusa 012  
Chem. Abst., 1917, p. 1796

Sulphur dioxide produces photo-inversion on the photographic film. The image may be either positive or negative according to the concentration of sulphur dioxide, the length of exposure to the gas, and the intensity of the light. The effect gradually weakens with time and generally disappears after several hours. Measurements with a micrometer microscope show that the silver grains undergoing photo-inversion are finer than those in the ordinary negative.

- The Grain of Photographic Plates      P. P. Koch and G. du Prel      014 ✓  
and a Method for its Investigation  
Chem. Absts., 1917, p. 318

The film of a plate is softened by soaking in water, then a little of the emulsion transferred to a microscope cover-glass, electrically warmed until the gelatin melts, when a second cover-glass is pressed against the first and the pair separated; this leaves a film only a few thousandths of a mm. thick, with the grains in a single layer. Illumination with deep red light makes it possible to obtain photomicrographs on panchromatic plates without photographically affecting the grains under observation, so that particular grains can be studied before and after exposure and treatment. Development shows in general no marked change in form or size of the grains. The effect of para-phenylenediamine and similar developers which gives a fine-grained image on coarse-grained emulsions is shown to be due to a reduction of only a part of the developable grains. Development after preliminary fixing shows silver aggregates substantially in the position of the original silver bromide grains, but larger. No evidence of the formation of nuclei is found. Count and measurement of many grains 0.2- $\mu$ -1.8 $\mu$  in diameter before and after exposure and development, throw much doubt on the usual dictum that a sensitive emulsion is necessarily of coarse grain.

- The Photographic Rendering of Tone Values      C. E. K. Mees      015 ✓  
Studio Light, June, 1917, p. 3

In this article the author indicates the conditions which must be fulfilled in order that the scale of tones of the subject may be correctly translated into corresponding opacities in the negative; in other words, in order that a perfect negative may be obtained. Although no mention is made of the well-known Hurter & Driffield system, the author has paved the way to a better understanding of the full significance of the H. & D. curve by placing a portrait and its corresponding curve side by side, and indicating corresponding portions of the curve and print.

- Colloid-Chemistry and Photography.      Lüppo-Cramer      017  
XXXVIII. The Accelerating  
Action of Dyes in Developing  
Chem. Abst., 1917, p. 1796

The dye sensitizers of the isocyanin series give rise to fogging under certain conditions. This occurs if metol is used as developer instead of hydrochinon, and in other ways. The reduction of silver nitrate solution is accelerated by pinachrome.

- Some Simple Lens Arithmetic      B. E. Havelock      019  
B. J., 1917, p. 298

The calculations given are based on the following rule: When copying or enlarging, say, four times, the greater extrafocal distance is four times the focal length of the lens and the smaller extrafocal distance a quarter the focal length of the lens. Similarly, five times and one-fifth, for the scale of five times; and so on for any given scale of enlargement or reduction.

- An Easy Method for Constructing a Focusing Scale E. Senior 019 2102

B. J., 1917, p. 313

The rule given is as follows: Take some useful proportion of the focal length of the lens and lay it off from the infinity mark, then divide the distance into two equal parts, and this again into two equal parts, and so on. If below these values we place a number which is greater by one than that which represents the number of parts that the focus has been divided into, then the focal length of the lens in inches when multiplied by these figures will denote the respective conjugate foci in inches.

- Landscape Photography 021

Phot. Min., Apr., 1917

. Devotes considerable space to composition.

- Print Fading 041

B. J., 1917, p. 306

In a letter to the editor it is suggested that self-toned prints may fade as a result of being printed from negatives intensified with mercury.

- Enlarging Accurately to Scale A. Lockett 046

B. J., 1917, p. 297

A method is given for making enlargements true to scale without the necessity of measuring from the lens, provided that the focal length of the lens is known.

- Enlarging with a Hand Camera 046

Kodakery, July, 1917, p. 24

- A Photographer in Java L. G. F. 055

B. J., 1917, p. 296

An article of general rather than photographic interest. The author states that photographic supplies are difficult to obtain in Java at the present time; he was charged 60 cents for a spool of Vest Pocket film in Batavia.

- A Paper Prepared by the Committee on Electrical Devices of the Society of Motion Picture Engineers 067

Mot. Pict. News, July, 1917, p. 136

An article discussing the relative advantages and disadvantages of direct and alternating current for motion picture projection.

- Notes and Comments 083

Phot. Min., Apr., 1917, p. 176

Describes the Multiple Aeroplane camera of Herbert and Huegen. This is made entirely of metal, measures  $8\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$  inches, weighs 6 pounds, and uses an F4.8 lens of  $4\frac{3}{4}$  inch focal length. Standard perforated motion picture negative film is used. To operate: one pull of the flexible cable winds up the previous exposure and registers the number of the photograph taken. One second completes the cycle of operations required to make an exposure.

## Photographing Wild Flowers H. D. House 098

Kodakery, July, 1917, p. 10

A description of a cabinet with transparent sides which is placed over the flower to be photographed. In this way, using a background of white cardboard, a flower or plant may be photographed as if isolated, even when a strong wind is blowing.

## The Bromoil Process Brum do Canto /89

B. J., 1917, p. 306

The hardening action in the Bromoil process is ascribed to the production of chromium chromate, and since this salt can be produced by the action of bichromate with sulphite, the placing of a print containing bichromate in the fixing bath will produce hardening.

## Theory of Bromoil /89

B. J., 1917, p. 310

In an editorial the conclusions arrived at by Dr. Brum do Canto are questioned. It is pointed out that in the bromoil process the chromium compound, which may or may not be chromium chromate, can be removed by the acid bath without affecting the hardening of the image. It is suggested that perhaps the production of the chromium compound is a by-product rather than a cause for the hardening action.

## The Spectra of the Sensitized Products J. M. Eder 1681 ✓

(Sensitivity Spectra) Produced by the Action  
of Vegetable Coloring Matters on Silver Bromide-Collodion

Chem. Absts., 1917, p. 1796

Experiments have been made on sensitizing silver bromide collodion emulsions with extracts of plant coloring matters: chlorophyll prepared from ivy leaves, spinach and wild vine, and also xanthophyll and carotin. The dark red leaves of the wild vine in autumn yield on extraction with alcohol a deep red solution which gives a hitherto unknown sensitizing spectrum. Other sensitizing coloring matters were obtained by extracting fresh blue grapes, beets, blossoms of red phlox, dried whortle berries, fresh black elderberries, curcuma roots, alkanna roots and red fly-agaric.

## A New Notion in Plate Rockers D. Charles 251

B. J., 1917, p. 302

Arrangement showing a dish which is not resting on the rocker, but on a shelf perforated at the ends so that projections from the shelf can pass through the shelf and tilt the dish at intervals.

## The Kodak Hand Camera Range Finder 2645

Phot. Focus, June 20, 1917, p. 425

## The Rotary Photographic Company

B. J., 1917, p. 304

The business, stock and factory of the Rotary Photographic Company, Ltd., has been offered for sale by auction.

"Rexo" roll film and motion picture film is advertised in the *Photographic Press* as now being manufactured by *Burke & James* of Chicago.

#### A. Proposed Co-Operative Plate Factory

A. Clark

B. J., 1917, p. 291

The author is attempting to form a company to be called the *New Era Dry Plate Co., Ltd.*, and states that he has an option on a quantity of glass and has obtained the assistance of an emulsion maker.

#### Restoring Scales

B. J., 1917, p. 294

For the restoration of engraved scales which have lost their pigment, the best black filling is a mixture of lampblack and tallow; for a white filling, a white cement can be used.

## Photo-Engraving

#### Printing Device for Rotogravure

0713

*American Printer*, June 20, p. 69

A note concerning the mercury vapor outfit to print photogravure tissues at the *New York Times* office.

#### Development in Offset Plate Making

W. C. Huebner

0723

*Photo-Engravers' Bulletin*, June, 1917, p. 12

The writer suggests that there are three obstacles to attainment of good work by offset: 1. Difficulty of securing true tonal values in half-tone screen or other grained negatives. 2. Hand transferring which obliterates the dots. 3. The spread during printing due to lack of accurate correlation of the speed of the three (the plate, the blanket, and the impression) cylinders.

## Physics

#### On Methods for Detecting Small Optical Retardations and on the Theory of Foucault's Test

Lord Rayleigh

*Phil. Mag.*, 1917, p. 161

The methods of high precision measurements are discussed and compared. The article is highly theoretical for general purposes but will be of value in practical optical tests.

#### Studies of the Ultra-violet Transparency of Certain Colored Media

H. W. L. Absalom

*Phil. Mag.*, 1917, p. 450

The author investigated the ultra-violet transparency of various naturally colored minerals, precious stones, and various preparations of colloidal metals.

Notes on the Absorption of X-Rays

T. E. Aurén ✓

Phil. Mag., 1917, p. 471

The absorption coefficients of various elements and compounds were determined and their relation to the atomic numbers shown.

Practical Limitations in the Projection of Light

J. A. Orange

Gen. Elect. Rev., 1917, p. 553

A discussion of the factors controlling brightness in the projection of light.

The Theory and Practical Use of Projectors and Their Latest Application as Portable Signals Outfits

L. C. Porter

Gen. Elect. Rev., 1917, p. 560

Absorption of Ultra-Violet Radiations by the Iodine Derivatives of Methane

Massol and Faucon

Compt. Rend., 1917, p. 813

The three ultra-violet absorption bands of iodine are considerably modified in the iodine derivatives of methane.

Remarks on the Temperature of Space

C. Fabry

Astrophysical J., 1917, p. 269

It is shown that the temperature of space can not be specified. A small black body in space will come to temperature equilibrium at 3° absolute, while a body absorbing selectively radiation of 0.4  $\mu$  will reach a temperature of 1000° Abs. The luminescence of comets is explained by assuming selective absorption of short wave lengths.

The Rotation of Prisms of Constant Deviation

W. E. Forsythe

Astrophysical J., 1917, p. 278

In the Hilger type of constant deviation spectroscope, it is shown where the prism should be placed on the rotating table in order that the objective should remain symmetrically illuminated. A simple geometrical proof is given.

The Physical Basis of Color-Technology

M. Luckiesh

Jour. Frank. Inst., July, 1917, p. 73

The author outlines the various methods of color analysis in use at the present time, and points out the applicability of the data obtained by each. The fact that spectro-photometric curves represent a complete specification of color from the physical standpoint is emphasized. The colored media discussed are divided into three classes, pigments, dyes and colored glasses; and a large number of spectro-photometric curves are given for various commercial pigments.

A Self Recording Electrometer for Atmospheric Electricity

W.A.D. Rudge

Electrician, June, 1917, p. 345

The Nernst Vapor Lamp

Electrician, June, 1917, p. 397

The lamp consists of an enclosed carbon or mercury arc in an atmosphere of the chlorides of aluminum, titanium, or zinc. An efficiency of 0.18 watt per Hefner candle power is claimed.

## Analytical Chemistry

### A Rapid Method for Estimating Nickel and Cobalt in Ores and Alloys

W.R. Schoeller and A.R. Powell

Analyst, 1917, p. 189

The nickel and cobalt are separated from other metals, especially iron, by precipitating with potassium iodide from ammoniacal tartrate solution. The nickel and cobalt iodides are dissolved in dilute hydrochloric acid, then separated by standard methods and estimated.

### Use of Diphenylamine and Diphenylbenzidine for Colorimetric Estimations

L. Smith

J. Chem. Soc. Abst., 1917, ii. p. 217

The author varies the amount of diphenylamine reagent to obtain the most stable and intensified coloration at ordinary temperature with certain quantities of nitric acid. Diphenylbenzidine is twice as sensitive towards nitric acid as diphenylamine.

### Prevention of Loss of Ammonia in the Estimation of Nitrogen by Kjeldahl's Method

A.W. Joachimowitz

J. Chem. Soc. Abst., 1917, ii. p. 217

The concentrated sodium hydroxide solution is added so as to form a layer below the acid solution and the two layers are mixed when ready for absorption of ammonia. (This method is familiar to every organic chemist).

### The Analysis of Gases by Means of Orsat's Apparatus, Replacing Pyrogallol by Hyposulphites

L. Descamps

J. Chem. Soc. Abst., 1917, ii. p. 216

Alkaline sodium hyposulphite is advocated for the absorption of oxygen. No mention is made of the instability of hyposulphite compounds.

### Estimation of Hardness in Water

A. Heyn

J. Chem. Soc., Abst., 1917, ii. p. 218

Influence of different constituents of natural waters on the estimation of hardness by different methods is shown.

### Microchemical Detection of Carbon and Sulfur

F. Emich

J. Chem. Soc. Abst., 1917, ii. p. 218

### Estimation of Small Quantities of Iron and Aluminum

R. Berg

J. Chem. Soc. Abst., 1917, ii. p. 220

System for the estimation of these metals in goods and organic substances generally.

- Estimation of Nickel in the Presence of Zinc and Iron S. Rothschild  
J. Chem. Soc. Abst., 1917, ii. p. 221

The nickel is separated from zinc by precipitation with dimethyl-glyoxime. The precipitate is then dissolved in hydrochloric acid treated with an excess of ammonia and electrolysed. The nickel is deposited and separated from the iron. It may be stated that to deposit all the nickel as a pure deposit is a very difficult matter.

- Determination of Small Amounts of Free Sulphuric Acid in Presence of Sulphates E. Vulquin and M. Entat  
J. Soc. Chem. Ind., 1917, p. 545

As little as 0.4 mg. of free sulphuric acid in presence of sulphates is claimed to be terminable by electrometric method.

- Titration of Oxalic Acid with Alkalis and Ammonia in Presence of Methyl Orange G. Bruhns  
J. Soc. Chem. Ind., 1917, p. 545

Most of the oxalic acid is titrated with alkali and the end point is obtained by precipitating the remaining oxalic acid with calcium chloride then titrating the liberated hydrochloric acid in presence of methyl orange.

- Colloid-Chemical Phenomenon as Indicator in Quantitative Analysis J.F. Sacher  
J. Soc. Chem. Ind., 1917, p. 571

The coagulation of colloidal lead molybdate serves as an end point for the titration of lead with ammonium molybdate.

- Titration of Iodine with Thiosulphate R. Kempf  
J. Soc. Chem. Ind., 1917, p. 571

Large excess of acid or the presence of alkali introduces an error in titration.

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## General and Inorganic Chemistry

- Scheme of Analysis for Blanc Fixe A. B. Hitchins 1414  
Paper, June 6, 1917, p. 11

A description of the tests used. For photographic purposes it is tested as follows: A small sample is spread upon a glass slide and a drop of 10% silver nitrate solution is put on it. If a deep brown or black stain develops within five minutes, it is unfit for photographic purposes. This paper is a contribution from the Research Laboratory of the Ansco Company.

- Production of Platinum B. J., 1917, p. 295

The total output of platinum from the Urals showed a decrease during 1916, 86,508 ozs. being produced as compared with 118,709 in 1915 and 158,084 in 1913.

- The Solubility of Lead Sulphate in Highly Concentrated and Fuming Sulphuric Acid      H. Ditz and F. Kanhäuser  
J. Chem. Soc. Abst., 1917, ii. p. 208

The solubility of lead increases with concentration of the sulphuric acid slowly up to 97%, then rapidly up to 100%.

## Organic Chemistry

- Microscopic Paper Fiber Analysis      G.K. Spence and J.M. Krauss      1412  
Paper, May '23, 1917, p. 11

A new quantitative method for determining the percentage weight of different fibers in a sample of paper or pulp. To determine the percentage weight of the different fibers present in a given sample of paper it is necessary to know the relative weights of equal areas or lengths of the different fibers. Since the weights per unit length of different kinds of fibers vary, the counts (unit lengths) must vary in inverse ratio. The sample of paper is pulped and diluted so that it contains from .02-.03 percent fiber. A small quantity of this is put on a slide and examined under a microscope. A magnification of about 160 diameters is used. The total length of each kind of fibre (the diameter of the field being taken as the unit of length) observed in the field is taken. It is advisable that not more than four complete diameters shall appear in one field. Sufficient fields should be counted to give a fair average. To obtain relative weights, Munktell's 0 filter paper, which is pure rag, was taken as the standard. Since there is a great variation in weights of the different deciduous fibers, to ascertain the amount of each kind present, the percentage of ducts occurring in each kind was ascertained from samples of pulp of each kind. By counting the ducts (which are characteristic for each kind of deciduous wood) in the sample under examination, and using the percentage factors, the amount of that kind of fiber may be determined. Tables are given.

- The Physical Testing of Paper as Affected by Humidity      R. Campbell      1412  
J. Ind. Eng. Chem., 1917, p. 658

Tests were made at different humidities on various samples of paper using the Schopper tensile strength machine, Schopper folding machine, Mullen tester and penetration test. As the relative humidity increased, strength and penetration decreased; stretch increased. Folding test in most cases reached a maximum at about 80% humidity. The author states that while the humidity control was not all to be desired, it did not vary more than two or three points. Tables and charts are given.

- Organic Chemical Reagents for Scientific and Technical Laboratories      R. Adams  
J. Ind. Eng. Chem., 1917, p. 685

Offering for sale a number of substances unobtainable in the open market which have been or can be prepared in the Organic Laboratory of the University of Illinois under the scheme initiated by Dr. C. G. Derick.

- Some Machinery Employed in the Manufacture of Glue** A. Lowenstein  
J. Ind. Eng. Chem., 1917, p. 710

Review of modern methods involved in chilling, cutting and spreading.

- The Ferrous Sulphate and Ammonia** W.A. Jacobs and M. Heidelberger  
**Method for the Reduction of Nitro to Amino Compounds**  
J. Am. Chem. Soc., 1917, p. 1435

This forms an excellent method when it is necessary to reduce nitro-compounds which are sensitive to acid. Ferrous sulphate solution is added to a solution suspension of the substance to be reduced in hot dilute ammonia.

- On the Use of Large Glass-stoppered Containers in Autoclaving** R. B. Krauss

J. Am. Chem. Soc., 1917, p. 1512

In order to conduct autoclave reactions in glass vessels, the reaction mixture is placed in a stoppered bottle, the stopper being securely clamped down, and the whole placed in water in an autoclave. In this way large differences between internal and external pressure are eliminated.

- Estimation of Traces of Water in Alcohol** Nussbaum  
J. Chem. Soc. Abst., 1917, ii. p. 215

The addition of definite amounts of water raises the temperature at which a slightly heated mixture of equal volumes of absolute alcohol and light petroleum becomes turbid when cooled.

- Electrolysis of Organic Compounds** A. Piguet  
Met. Chem. Eng., July, 1917, p. 42

A design of cell is devised to prevent a circulating emulsion to be reduced at the cathode from being oxidized by the anode and vice versa.

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## Photochemistry

- Ultra-Violet Light. Its Application in Chemical Arts. Part IV.** C. Ellis and A.A. Wells  
Chem. Eng., June, 1917, p. 148

- On the Inner Mechanism of the Photo-Chemical Reaction between Oxygen and Hydriodic Acid** N. P. Strachov  
J. Russian Chem. Soc., 1917, p. 825

Under the influence of the violet light on this reaction the iodine produced may act as a light filter and affect the velocity. Strachov, using Plotnikov's Photo-Thermostat with mercury lamp as source, has studied this effect, the outer cylinder of the reaction-vessel being jacketed with iodine solutions of varying strengths; it was found that 2-cms. of 256/1000 N. iodine solution completely absorbed the active rays. However, the iodine separated in the course of the reaction only amounts to a concentration of 2/1000 N., so that no detectable filter-action was to be expected from this, and experimentally it was found that no such action occurred till the iodine concentration exceeded 27/1000 N. Further it was shown that any molecular complexes formed by the released iodine had no catalytic effect in the working range.

# Patent Abstracts

## U. S. Patents

1228680

F. W. Kent D1375

A Printing Paper to be used for transferring photographs to wood, textiles, etc. A paper base is saturated with paraffin and coated with a substratum of pyroxylin, gelatine and glacial acetic acid. The sensitive emulsion is coated over the substratum, exposed and developed in the usual way. The waxing of the paper excludes impurities and permits the paper to be readily stripped off.

1228877

P. D. Brewster K31 K/43

A Colored Motion Picture Process. A pair of color sensitive negative films arranged face to face and permanently connected together along one edge are passed through a two-color motion picture camera and complementary color selection images printed on each film. From these negatives a two-color positive film is made. The camera includes two lenses which are very close together and prisms which reflect the images from the lenses in register upon opposite sides of the pair of negative films.

1225929

J. I. Crabtree, Assigned to E. K. Co. K38

An Apparatus for Treating the Surfaces of Cine Film, one surface at a time. The film is wound in a helix about a drum covered with a flexible wall which may be inflated to bear against the inner face of the film and thus prevent the access of the treating fluid thereto.

1227075

C. B. Rowntree 0631

Apparatus and Method of making Motion Pictures. The camera, which is of the kind that can take one picture at a time if necessary, is mounted to slide vertically in suitable guides with its lens pointed downwardly toward a horizontal ground glass illuminated from below. The picture materials such as advertising letters, hearts and cupids are successively moved to different positions on the glass and photographed in silhouette.

1228722

W. Verbeck 0631

An Apparatus for enabling descriptive matter to be photographed simultaneously with a main picture. It is particularly adapted for use with motion picture cameras. The descriptive matter is held on a frame in front of the camera outside the normal field of view and is brought into the field of view optically by interposing a section of a converging lens between it and the camera.

1229159

J. E. Singleton and S. T. White 0631

A Shutter Operating Attachment for twin motion picture machines. It includes a cord and pulleys which connect the operating handles of the shutters of the two machines so that when one is open the other will always be closed. When the film in the exhibiting machine is nearly exhausted, the operator sets the second machine in motion and as soon as the end of the film in the first machine is reached the shutter thereof is closed and simultaneously the shutter of the second machine will be automatically opened. Thus one attendant can operate both machines.

1226655

W. M. Grosvenor 0649

A Lubricated Motion Picture Film which is prepared by coating the edges thereof with a mixture of celluloid, graphite, methyl alcohol and amyl acetate.

1226663

F. W. Hochstetter, Assigned to H. P. Patents and Processes Co., Inc. 067

A Device for Exhibiting Tinted Motion Pictures. Instead of actually coloring the film, a translucent screen is used which is suitably tinted by various colored electric lights.

1225681

A.A. Ruttan and C.E. Hutchings, Assigned to E.K. Co. 210

A Latch Mechanism for Folding Cameras. The latch for the front bed and the latch for retaining the focusing frame or plate holder in position are both mounted upon a single plate attached to the top of the camera body in such a way as to also assist in holding the carrying handle of the camera in place.

1227675

A.A. Ruttan and C.E. Hutchings, Assigned to E.K. Co. 2102

A Focusing Mechanism for Cameras. It is actuated by a lever pivoted centrally of the folding bed, the lever carrying a toothed disc which co-operates with a rack upon the movable extension bed.

1226681

C. H. Mansfield 215

A Quick Winding Arrangement for Roll Film Cameras. It is actuated by a rack and pinion, the movement of the rack being progressively decreased to compensate for the increasing diameter of the film on the winding roll.

1226660

R. D. Herschel 2151

A Focusing Device for Roll Film Cameras. A lens of the same focal length as the main camera lens is carried by a swinging arm on the front board of the camera. A co-operating focusing screen is pivotally mounted on the camera body. When the auxiliary lens is in focus on the screen, the main lens will be in focus on the film.

1227692

T. Tamura 2151

A Roll Film Camera adapted to use a film carrying alternate sensitive sections and semi-transparent focusing sections. By means of suitable doors and light traps in the camera back the operator can focus on the proper sections of the film, then close up the back and wind a sensitive film into taking position.

1228051

A. D. Rochau 2152

A Roll Film Camera provided with a device for preventing double exposure. The shutter cannot be operated a second time unless its controlling mechanism is released by winding a fresh section of film into position.

1227276 A. Kroedel, Assigned to E. K. Co. 2653

A Spool Holder for Roll Film Cameras. In each film chamber there is a pivoted frame carrying a relatively fixed spool center at one end and a pivoted spool center at the opposite end. In use, the frame is swung out of the chamber to enable the spool to be easily loaded between the centers, whereupon it is swung backwardly into the chamber.

1226955 C. H. Eckerson, Assigned  $\frac{1}{2}$  to G. J. Scott 2153

A Roll Film Camera having a controlled opening in the back for printing writing on the edges of the successive picture spaces of the film. The film is provided with a slightly translucent backing paper. The operator writes upon a strip of ground glass or celluloid placed in the opening of the camera back. By opening a suitable shutter, light is permitted to strike through the backing paper to the film, thus printing the writing.

1226838 A. F. Wolber 216-26

In a half-tone process camera the provision of a rotating mask so that the plate may be separately exposed in several parts and also a method of rotating the screen so that a small screen may be used.

1229125 N. T. Nilsson, Assigned  $\frac{1}{2}$  to Samuel Evans 221

A Machine for exhibiting either transparent or opaque motion pictures using either artificial light or sunlight. It is contained within a cabinet which permits of one or a few people observing the pictures at a time.

1226806 W. L. Patterson, Assigned to Bausch & Lomb Optical Co. 2235

A Scene Shifting Device for Projection Apparatus. It enables one projected image to displace another on the screen in such a manner that no apparent movement of the two images occurs, one picture apparently being applied by being wiped across the screen as the edge of the other disappears. It comprises two projecting systems together with a condenser and lamp, the latter together with its diaphragm being laterally shiftable to co-operate alternately with the different projecting systems.

1228784 C. Kesses 241

An Apparatus for Printing on Sensitive Paper simultaneously from type and from a negative. The type, negative and lamp-house are pressed downwardly against a continuously moving strip of sensitive paper and travel with it a short distance. They are then lifted up, moved backward and brought into contact with the next adjacent section of sensitive paper and so on.

1228912 T. E. Halldorson 241-222

A Combined Printing and Enlarging Apparatus. The printing apparatus comprises a box having a printing frame in the top and a printing light near the bottom. Opening into one side of the box is a projection apparatus, the image from which may be thrown from an adjustable mirror against the printing frame. By manipulating the mirror, printing or enlarging can be done as desired.

1227092 V. C. Teneau 258

An Apparatus for Drying Photographic Prints. The prints are carried by means of co-operating endless belts around heated drums.

1226724 J. G. Torr 2612

A Locking Means for Tripods consisting of three interconnected radiating arms which are attached to the tripod legs to prevent the latter separating on slippery surfaces.

1227991 M. J. Barnett, Assigned to Eber Beaulieu 2626

A Regulatable Actuator for Camera Shutters which enables the operator to include himself in the picture. It is driven by a coiled spring and pneumatically controlled.

1227208 A. A. Ruttan and C. E. Hutchings, Assigned to E. K. Co. 2651

A Photographic Plate Holder made from stamped sheet metal and having an improved means for locking the sensitive plate in proper register.

1228389 F. W. Barnes, Assigned to E. K. Co. 2668

A Ray Filter Holder provided with a flexible steel clamping ring for adjustably engaging the lens tube, said flexible ring being fastened by a slot and bolt connection.

1228255 C. Spiro 3101

A Motion Picture Camera in which the winding reel is driven from the crank shaft through a spiral spring and frictional hub. A pawl which controls the winding film sprocket is released at the proper intervals by teeth upon a disc connected to the spiral spring.

1227886 H. M. Connor and D. D. Miles, Assigned by Direct 3103  
and Mesne Assignments to A. H. Herbert, et al.

A Shutter Controlling Mechanism for Motion Picture Apparatus. It is especially adapted for obtaining dissolving views over a predetermined length of film.

1227081 M. Segel 3201

An Automatic Threading Device for Motion Picture Machines. The end of the film is placed in engagement with the upper sprocket and the latter rotated. The downwardly fed film end is deflected by suitable guides automatically through the gate and lower sprocket, the usual loops being also automatically formed.

1227887 H. M. Connor and D. D. Miles, Assigned by Direct 3201  
and Mesne Assignments to A. H. Herbert, et al.

An Intermittent Feeding Mechanism for Motion Picture Apparatus comprising an oscillating lever carrying film engaging teeth which are alternately moved forward in engagement with the film and rearwardly out of engagement.

- 1227039 S. M. Coffman, Assigned by Mesne 3202  
Assignments to Photo Motion Co.

A Film Tensioning Device for Motion Picture Apparatus. Two parallel bars are held against the edges of the film adjacent the gate by means of a spring-pressed lever, the pressure of which is controlled by a thumb screw.

- 1227094 C. Uebelmesser, Assigned to Cru Patents Corporation 3208

A Shaft for Receiving Film Reels during Winding. The arrangement is such that the mere pushing of the reel onto the shaft will hold the former automatically in position.

- 1226883 D. Higham 323

A Combined Phonograph and Motion Picture Apparatus. A sound record and picture record are provided with corresponding indices. A clutch connecting the picture and sound mechanism is specially arranged to avoid a sudden start of the sound mechanism which would cause the reproducer to jump out of the record groove.

- 1227623 D. Horsley 341

A Printing Machine for Motion Picture Film in which the strength of the light is automatically controlled through electro magnetic mechanism by means of appropriate notches in the edges of the film.

- 1226282 M. Vandal 383

A Machine for Coloring Motion Picture Film. A stencil film made by cutting out portions of a positif, is carried through the machine in registry with the film to be colored and specially moving brushes carry the coloring matter through the stencil openings onto the treated film.

- 1227138 F.W. Hochstetter, Assigned to Paul M. Pierson 387

A Device for Restoring Blemished Motion Picture Films. The film is carried between rotated brushes for preliminary cleaning and then is wiped by co-operating pairs of ribbon-like buffers of flannel carrying a solvent of grease. It is finally cleaned by a subsequent set of ribbon-like buffers together with cylindrical edge buffers.

## British Patents

- B1000098-1915—Color Dye Images Brewster Film Corp. KJ88

British form of U. S. Patent 1214940, for the production of iodide from silver in the form of a hydrogel, so that after dyeing with a basic dye, as in the Traube process, it is not necessary to remove the silver iodide.

- B106102-1916—Typographic Title Slides C. Doughty 045

This invention relates to an improved method of projecting cinematographs on lantern slide announcements. The announcements are set up in ordinary printer's type and transferred to a glass slide by the simplest form of offset press, the inked type being printed on a rubber roller which is then printed off onto a glass slide. (B. J., 1917, p. 316)

## Swiss Patent

Swiss, 73299-1917

Compagnie Francaise des Papiers  
Pelliculaires Pin.

**Film for Temporary Support in Photography.** The surface to be covered with temporary film is coated first with a cocoanut oil soap, and after this has dried, the film composition is poured over it. The solution of soap is made of soap 8 g., and water 1000 g. The film composition is made by softening 1000 g. gelatine in 8000 g. of cold water, heating the mass on a water bath at about 80°, and after the gelatine has dissolved a solution is added composed of 20 g. of a 6% aq. solution of chrome alum and 200 g. water. This mixture is maintained in a liquid state for about 30 minutes, when there is added, with stirring, first a solution of 166 g. of soap in 500 g. of water, and then 100 cc. of 28° glycerol. (Chem. Abst., 1917, p. 1797).



# Monthly ABSTRACT Bulletin



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*The Company.*

# Monthly Abstract Bulletin

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## Note

**W**ITH this number of the *Abstract Bulletin* is commenced the publication of abstracts of the scientific communications of the Laboratory. The three abstracts in this number represent the first three communications published since the making up of the second volume of the Abridged Scientific Publications, which is just ready.

Abstracts of the more generally interesting reports filed in the Laboratory during the preceding month will also be published in this *Bulletin* beginning with the present issue.

The references to the full scientific communications are given, and if further information is desired copies may be obtained from the Laboratory. Fuller information as to any report abstracted can also be obtained.

## **Additions to the Numerical Classification**

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119 Miscellaneous Plates.

329 Mutoscopes.

## Photography

### Baryta Coating

B13

Phot. Dealer, 1917, p. 220

It is stated that Messrs. Rajar, Ltd., are supplying the trade with Baryta coated paper, and are prepared to undertake Baryta coating for other manufacturers.

### The Parallax Method of Fine Focusing

F1

B. J., 1917, p. 322

In focusing by parallax, a clear glass screen with a mark of some kind on it is used in place of the ground glass and the camera extension is adjusted until the image appears to be quite stationary in respect to the fixed mark on the screen when the eye is moved. If the image appears to move with the eye, then the focus is in front of the screen and if it moves in a reverse direction to that of the eye the focus is behind the screen. A very slight movement of the eye is all that is necessary to detect movement, and with the use of a magnifier the method is very sensitive. The author prefers for the greatest sensitiveness to have a scale ruled on the focusing screen and another scale as the object, but, naturally, the method can be used with satisfaction without these precautions.

### Focusing in Portraiture

F1

B. J., 1917, p. 338

This article deals with the adjustment of the focus so as to get a satisfactory degree of definition in the sharpest plane, the sharpness falling off in the less prominent parts of the composition. The author mentions the fact that operators obtain different results from a lens according to whether they are used to it or not and suggest that the reason for this is a slight residue of chromatic aberration which with experience is allowed for in focusing. Attention is called to the importance of the swing back in obtaining the best results in portraiture.

### Note on the Keeping of Chemicals

G1

B. J., 1917, p. 386

It is suggested that deliquescent salts can be kept in good condition if the bottles are stored in a small cupboard containing an open bottle half full of strong sulphuric acid.

### Professional Work for Amateur Photographers

GJ

B. J., 1917, p. 391

A description of the photo finishing department of the Photo Art Shop of St. Paul, Minn.

### Strip Printing for Midgets

D. Charles J3

B. J., 1917, p. 379

The author recommends the printing of images in the same way as postcard printing by use of a suitable mask, making two rows of prints on a sheet rather than using a long narrow strip.

**Sulfide Toning of P. O. P.****A. J. Prentice J84****B. J., 1917, p. 371**

If a Solio paper be printed as deeply as is necessary for self-toning paper and then fixed in plain hypo, washed briefly and placed for three minutes in a bath of ammonium sulphide, one drop to water eight ounces, a satisfactory tone is obtained.

**A Bibliography on Color Photography****K****Mot. Pict. News, July 21, 1917, pp. 452, 886****The Photographic Rendering of Tone Values. III.****C. E. K. Mees 015****Studio Light, July, 1917, p. 6**

This, the third article of the series, describes how the contrast of a negative increases during development at a gradually diminishing rate until it reaches a maximum. Development beyond this results in the production of fog. The magnitude of the maximum contrast depends largely on the nature of the plate. High speed plates have low values while process plates have higher values. By short development, a negative of low contrast can be obtained on a plate which gives a high maximum contrast, though since such plates have a very short straight line portion, only subjects of limited scale can be rendered on the straight line portion of the curve. This is why it is not possible to get a satisfactory portrait negative on a process plate by short development.

**The Negative****W. F. Slater 015****B. J., 1917, p. 344**

At the South London Photographic Society meeting, Mr. W. F. Slater gave an address on "The Negative". Mr. Slater for a number of years has given lecture demonstrations on behalf of Kodak Ltd. The abstract of this lecture in the B. J., is worth reading as being a very simple explanation of the theory of exposure and development. The only point that requires correction is the statement that correct development of the negative is far more important than correct exposure, which presumably is an error in transcription.

**Scientific Theories: in Special Reference to Lenses****019****B. J., 1917, p. 324**

It is pointed out that in geometrical optics as opposed to physics in general, we are dealing largely with artificial conceptions, and that consequently the theories of geometrical optics do not deal with actual conditions but with certain assumed simplified conditions; so that although the theories of geometrical optics are useful, they cannot be rigidly applied to actual lenses.

**Perspective and the Theory of Vanishing Points****019****B. J., 1917, p. 374**

Criticism of a paper by Dr. Roads in "The Optician and Scientific Instrument Maker."

- Essentiality in Hand Cameras** G. M. Nicol 024  
B. J., 1917, p. 387

The author deals with the hand camera from the point of view of the lens and gives some good advice as to the focal length and aperture required for particular branches of work. The article also contains a discussion of shutters. One of the ideas in this article is certainly a valuable one in presenting facts with regard to lenses. It is pointed out that while the focal length of a lens governs scale and angle, and relative aperture governs the intensity of the image, the absolute aperture, that is the diameter of the stop itself, governs the depth. The use of this classification might be valuable in instruction booklets.

- Sketch Portraiture Complete** J. S. Adamson 031  
B. J., 1917, pp. 326, 339

Two articles dealing with the illumination of the sitter and background in taking the negative, with the after treatment of the negative and appliances used in making the print with the practical work in connection with the mounting of prints and the working up of prints with the powder air brush; also with the introduction of clouding and sketch work.

- Foggy Negatives** 041  
Studio Light, July, 1917, p. 16

It is considered that the fog on a large percentage of negatives is directly attributable to a dirty lens.

- Locally Controlling the Printing of Enlargements** 046  
Kodakery, August, 1917, p. 18

A description of the method of shading during enlarging by interposing the fingers or some other opaque object in the path of the light rays from the lens to the enlarging easel.

- Copying Photographs and Printed Matter** 057  
Studio Light, July, 1917, p. 19

In order to copy a composite picture, such as a photograph with printed matter attached, the exposure and development should be adjusted to suit the photograph and the density necessary for the line work is obtained by local intensification. Instructions are given for the use of the Monckhoven intensifier.

- A Paper Prepared by the Committee on Electrical Devices** 067  
of the Society of Motion Picture Engineers  
Mot. Pict. News, July 21, 1917, p. 448

A continuation of the paper in the issue of July 7, on the science of projection.

- Photographing from the Air** H. Voorwalt 083  
Lux, 1917, p. 197

This is a continued article of which at present we have only the second portion; the first is being obtained and the next will be published in the August number of Lux. The author deals with the development of the negative, the lens and the use

of stereoscopic pictures. There is little that is new in the article, but owing to the difficulty in obtaining information on this subject at the present time the article is of interest. Some interesting photographs illustrate it but unfortunately these are taken from very low altitudes, the highest being less than 4000 feet. (This article has been translated from the Dutch in the Laboratory and a copy of the translation can be obtained if required.)

Simple Photographic Method of Recording Finger Prints . 086  
B. J., 1917, p. 392

The method which is published by the Eastman Kodak Company consists in greasing the finger with vaseline, wiping off the excess of vaseline and pressing the greasy finger on a previously fogged sensitive plate, which is then placed in a developing solution, when the vaseline protects the part which it covers and this gives a negative of the finger print, from which ordinary prints can be made. If only one or two prints are required, paper can be used instead of a plate, when a reverse image is obtained. For making impressions on blue print paper, a mixture of lanoline saturated with stannous chloride is used instead of vaseline. This does not give quite as sharp lines as the vaseline and silver paper.

Experiments Concerning L. A. Bauer and W. F. G. Swann 089  
"Magnet-Photography"  
B. J., 1917, p. 391

L. A. Bauer and W. F. G. Swann have repeated the experiments made by F. S. Mace on the effect of a magnetic field on photographic plates and find some evidence that a magnetic field intensifies photographic action, especially action by wood or resin.

Wild Animal Photography H. T. Middleton 098  
Kodakery, August, 1917, p. 8

An article illustrating what can be done in this direction with very simple apparatus.

Eastman Commercial Film 1218  
Studio Light, July, 1917, p. 19

A film intermediate between process and portrait film, similar in character to the Seed 23 emulsion, it is particularly suitable for making duplicate negatives by contact or by enlargement.

Some Trials of Kallitype C. N. Bennett 1312/74  
B. J., 1917, p. 378

The author uses Burton's formula for sensitizing and develops in a solution containing 40 grains of borax and 30 grains of Rochelle Salt to the ounce of water, with the addition of 15 minims of a weak solution of potassium bichromate. This is stated to give a fine neutral sepia. Cutting down the borax leads to a warmer brown image. By increasing the bichromate restrainer 4 to 8 times a contrasty print is obtained without half-tones, very suitable for copying old engravings, and if the print is left in the developer only 10 minutes a good yellowing of the paper is obtained. An over-exposed Kallitype print can be saved by removing it from the developing dish and fixing in weak oxalic acid; a cold black tone is obtained.

- The Properties of Contrasty Bromide Papers** L. Lobel 137  
Photo-Revue, June, 1917, p. 3

A contrast-giving bromide paper has been introduced in France in response to a demand from the photographic aviation service. The paper is four times slower than a standard bromide paper and is stated to have a scale of 1 to 16.

- Glycerine Substitutes in Germany** 1528  
B. J., 1917, p. 346

An extract from the "Pharm. Ztg." giving a list of the various substances adopted in Germany in place of glycerine.

- Qualitative Tests for the Commoner Developers** W. Ermen 1531  
B. J., 1917, p. 390

Six tests are given for distinguishing between the developers on the market, the tests given being quite satisfactory from the chemical point of view.

- Permanganate Bleach for Bromides** 1661  
B. J., 1917, p. 371

When using this bleach it is suggested that an oxalic and sulphite bath be used before sulphiding in order to remove the permanganate stain.

- Drying Frame for Prints** G. Boutet 258  
Photo-Revue, June, 1917, p. 1

A double frame is made of thin strips of wood raised in the center like a roof and covered with galvanized netting. This is suspended from the ceiling by cords passing over a pulley so that it can be lowered and raised, and the prints are placed upon it to dry.

- Photographic Lens Names** H. L. 263  
B. J., 1917, p. 325

An article summarizing all the names which have been given to lenses and dividing them into classes according to their derivation. As desirable features in a lens name it should (1) be short, (2) sound well, (3) have some definite connection with the lens. If a name having some relation to construction cannot be used, a lens may be named after its inventor or maker or some interesting point in its history or use.

- The Kodak Range Finder** 2645  
B. J., 1917, p. 348

A review of the range finder under the heading of New Apparatus, the matter being considered from an entirely nontechnical and practical point of view.

- A New Departure Screen** 324  
Mot. Pict. News, July 21, 1917, p. 446

A description of a projection screen which is partly diffusing and partly reflecting, this condition being obtained by producing a half-tone screen effect, the dots being silvered, while the interstices are inlaid with a white pigment.

**Photographic Materials and Processes****B. V. Storr****B. J., 1917, pp. 353, 364**

A review of recent progress in the subject for the Society of Chemical Industry, and reprinted from Vol. 1 (1916) of their annual reports on applied chemistry.

**The Teaching of Photography****B. J., 1917, p. 362**

The article lays stress on the fact that only a specially trained teacher can obtain the best results and that a knowledge of the subject is not sufficient in itself to make a teacher. It is suggested that the apprenticeship system should be replaced by systematic instruction, under which those entering the photographic business should spend two days in the school each week, and the remaining three or three and a half in the business, the system to be compulsory both for employers and employees up to a certain age, and the course lasting two years, the first year being devoted to elementary work and the second year to some specialized study; scholarships to be available to make an extension to a third year possible.

**An Improved Method of Silvering Glass  
with Chemicals of Only Ordinary Purity****R. E. Crowther****B. J., 1917, p. 375**

The paper should be read by those interested in silvering glass.

**The British Photographic Manufacturers' Association****Phot. Dealer, 1917, p. 198**

There are now forty manufacturing firms who are members of this Association, Mr. E. W. Houghton being the first president.

**The Photographic Dealers' Association****Phot. Dealer, 1917, p. 204**

An article on the work of the Association, by the president, Mr. J. A. Sinclair.

**Calcium Sulfide as an Antidote for Mercuric  
Chloride Poisoning****J. H. Wilms****Chem. Abst., 1917, p. 2117**

As a result of experiments on dogs, the author finds calcium sulfide to be a satisfactory antidote for mercuric chloride poisoning. The calcium sulfide is freshly made up in a solution of one grain to the ounce of distilled water and the dose is one ounce of this solution to each grain of mercuric chloride taken. In advanced cases a more concentrated solution should be used intravenously, but sulfide may be administered by the mouth when the intravenous method is not practicable. The use of calcium sulfide by the mouth may be continued until all symptoms of mercurialism have disappeared, since it is not poisonous. Deteriorated solutions of calcium sulfide produce convulsions. The use of the white of an egg for mercurial poisoning is useless since mercuric chloride is so rapidly absorbed from the stomach that very little remains at the end of five minutes.

# Photo-Engraving

Commercial Photographs for Half-Tone Reproduction Gatchel and Manning 03207

B. J., July 13, 1917, p. 366

An reprint of an article issued by the "American Printer."

A Practical Explanation of Photo-Engraving T. P. O'Neill 07  
American Printer, July 5, 1917, p. 32

An account for the general reader that is not too technical.

Enamel Formula for Zinc Etching 07006  
Process Work and Electrotyping, June, 1917, p. 87

The following is said to give a fine black enamel for zinc:—Fish Glue, 4 ozs.; Albumen, 2 ozs.; Water, 4 ozs. Am. Bich., 160 grains; Am. Ferri Citrate, 16 grains; Sugar Candy, 48 grains; Chromic Acid, 8 grains; Glycerine, 48 drops.

Some Technical Features of Wood Engraving G. H. Whittle 0731  
Printing Art, July, 1917, p. 337

Half-tone Etching as a Fine Art G. H. Whittle 07007  
Printing Art, June, 1917, p. 257

An article illustrated with examples showing the effect of hand-tooling on half-tone engravings.

Twenty-First Annual Convention of Manufacturing Engravers' Association

Photo-Engravers' Bulletin, July, 1917, p. 3

A full report of this convention, dealing largely with questions of cost of production and selling prices.

Technical Requirements for Profitable Photo-Engraving A. J. Newton  
Photo-Engravers' Bulletin, July, 1917, p. 43  
American Photo-Engraver, July, 1917, p. 333

Discusses present methods and suggests various simplifications.

Reduction of Photos or Drawings R. G. Wright  
American Printer, July 5, 1917, p. 38

A suggestion that ordinary rule of proportion should be used when size of reduction is required to be calculated.

Preventing Paint Flaking Off Originals  
Process Work and Electrotyping, June, 1917, p. 88

Suggests  $\frac{1}{4}$  oz. gum tragacanth to 20 ozs. water should be used to mix color with.

Census Returns of Printing Industry  
American Printer, August 5, 1917, p. 54

The Census returns for 1914 show that photo-engraving employed 8,525 persons.

## Physics

- The Optical Properties of Light Filters** C. E. K. Mees 266  
Journal of the Optical Soc. of America, Jan., 1917, p. 22

A theoretical and practical discussion. Various defects of perfect and imperfect filters are elaborated, and photographs of the action of the latter class are given.

- A Study of the Integral and Luminous Radiation from Solids** T. Peczalski  
Annales de Physique, 1917, p. 224

- The Complete Photo-Electric Emission from the Alloy of Sodium and Potassium** W. Wilson  
Proc. Roy. Soc., July, 1917, p. 359

An experimental investigation of law governing the variation of the complete photo-electric emission from this alloy, with the temperature of the source of radiation. The author's results show that Richardson's formula for the temperature variation of the thermionic emission from metals applied to this alloy as the theory suggests it should.

- The Crystal Structure of Magnesium** A. W. Hull  
Proc. Nat. Acad. Sci., July, 1917, p. 470

First an X-ray photograph was taken of single small crystals to give the approximate structure, and then a photograph was taken through finely powdered magnesium to confirm and check the approximate results.

- Ionization by X-rays in a Magnetic Field** A. Righi  
Compt. Rend., June 18, 1917, p. 938

The author contributes new data on this subject and has given results for various values of the magnetic field.

- A Photo-chemical Theory of Vision and Photographic Action** P. G. Nutting  
Journal of the Optical Soc. of America, Jan., 1917, p. 81

An outline of the functional relationships between radiant energy and its action on the photographic plate and on the retina. Various sub-hypotheses are framed to account for the known facts. It is pointed out that the general equation applicable to the retina is insoluble.

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## Analytical Chemistry

- Iodometric Determination of Chlorine in Chlorides** G. Torossian  
J. Ind. Eng. Chem., 1917, p. 751

The sample containing the chloride is mixed with powdered manganese dioxide and treated with sulphuric acid in a distilling flask. The chlorine is distilled over into potassium iodide solution and the liberated iodine is titrated with standard thio-sulphate solution.

**A Method of Ashing Organic Materials  
for the Determination of Potassium**

P. L. Blumenthal, et al.

J. Ind. Eng. Chem., 1917, p. 753

To avoid loss of potassium due to spattering and volatilization, the authors recommend that the sample before ashing should be evaporated with definite amounts of nitric and sulphuric acids.

**Yellow Mercuric Oxide as a Standard in Alkalimetry**

G. Incze

J. Soc. Chem. Ind., 1917, p. 671

The yellow mercuric oxide treated with an excess of potassium iodide forms potassium hydroxide which is titrated with the acid to be standardized.

**Electrolytic Analysis with Small  
Platinum Electrodes**

F. A. Gooch and M. Kobayaschi

J. Soc. Chem. Ind., 1917, p. 671

Copper, nickel and lead are each completely precipitated by employing high current densities and rotating electrodes. Loose particles of metal are collected by means of a special filtering tube previously weighed. (If the electrolyte could be conveniently heated to a high enough temperature, the deposit would in all probability be more adherent.)

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## Colloid Chemistry

**Semi-permeable Membranes and Negative  
Adsorption**

W. D. Bancroft

J. Phys. Chem., 1917, p. 441

A critique of osmotic phenomena in relation to osmosis, the general deductions from which, are:—(1) We may have osmotic phenomena with a porous diaphragm provided there is very marked negative adsorption and provided that the pores are so small that the adsorbed film practically fills all the pore space. (2) A porous diaphragm will act as a semi-permeable membrane in case there is no measurable adsorption of the solute and the adsorbed films fill the pores completely. (3) In the usual case of a semi-permeable diaphragm this is not porous, and the semi-permeability is due to the fact that the solvent dissolves in the diaphragm while the solute does not to any appreciable extent. (This is directly contradicted by the recent results of F. Tinker, Proc. Roy. Soc., A, 93, 268, 1917.) (4) A liquid is not to be considered as a porous substance and solubility does not depend on porosity.

**Capillary Phenomena and  
Supercooling**

S. L. Bigelow and E. A. Rykenboer

J. Phys. Chem., 1917, p. 474

The authors have designed apparatus for the measurement of supercooling in capillary tubes. They show that much greater supercooling can be produced in capillaries than in tubes of larger diameter. No mathematical connection between the diameter and the degree of supercooling could be obtained. However, a plausible explanation of the supercooling under these conditions is given, based on the lower probability of appearances of a single crystallisation centre in lesser volume. The material of the tube appears to have little influence, nor have small changes of surface tension any importance. In the case of sulfur, the amount of supercooling depends on the temperature of pre-heating.

**The Rhythmic Precipitation of Colloidal Mercury****H. S. Davis****J. Amer. Chem. Soc., 1917, p. 1312**

Phenomena of the Liesegang ring type are obtained by the reduction of mercurous nitrate by sodium formate in agar gel at 53° C. It is suggested that super-saturated solutions of colloidal mercury are formed.

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**Organic Chemistry****Experiments in the Beating  
of Sulfite Pulp****O. Kress and G. C. McNaughton****1411****Paper, July 4, 1917, p. 13**

Gives details of experiments to show the effect of various conditions of beating sulfite pulp and the behavior of the sedimentation tester with sulfite stocks, beaten under various conditions. Photomicrographs and tables are given. The author concludes that the sedimentation test as an indication of the beating treatment is exceedingly questionable.

**Characteristics of Paper Fibres (Part IV)****H. A. Maddox****1411****Paper, June 27, 1917, p. 21**

A list of color effects produced by various reagents on various fibres.

**Folding Endurance of Paper****F. P. Veitch, F. Sammet, E. O. Reed****1412****Paper, May 30, 1917, p. 13**

A paper dealing with the standardization and accuracy of testers for determining folding endurance. Tables of results are given.

**The Examination of Acetic  
Anhydride****L. G. Radcliffe and S. Medofski****1511****J. Soc. Chem. Ind., 1917, p. 628**

Direct titration with alkali after completion of hydrolysis is the most rapid method, though it is advisable to check the result by treatment with aniline. Full details of procedure are given. It is also shown that crystallized sodium acetate loses no water of crystallization on exposure to the laboratory atmosphere, but that it can be completely dehydrated by standing for twelve days over calcium chloride in a desiccator or by heating for twelve hours in a steam oven.

**Solvents of Cellulose Acetate****A. Dubosc****1516****Caoutchouc, 1917, pp. 9227, 9251**

Continuation of list of solvents with their properties.

**Compounds of Calcium Chloride and Acetone****L. S. Bagster****1516****Trans. Chem. Soc., 1917, p. 494**

Compounds containing respectively one and two molecular proportions of acetone to one of calcium chloride are described. They are formed by treating anhydrous calcium chloride with dry acetone, and are decomposed by removing the acetone by heat or diminished pressure. Their vapor pressures are compared with those of acetone in tabular and graphic form.

- Hydroxyphenylglycine** Meldola, Foster and Brightman 15314  
Trans. Chem. Soc., 1917, p. 552

In the course of their work on optically active nitrogen compounds the authors here publish a formula for the preparation of p-hydroxyphenylglycine (the developing agent "glycine") which is stated to give a better yield than the original method of Vater.

- Formaldehyde as a Diastase Prototype** G. Woker  
Chem. Absts., 1917, p. 2090

The author claims that formaldehyde produces hydrolysis of starch, as it inhibits the development of the blue color with iodine. (cf. following abstract).

- Reaction between Starch and Formaldehyde** W. v. Kaufmann  
J. Chem. Soc. Abst., 1917, (1) p. 251

Starch combines with formaldehyde, giving a compound which develops no blue color with iodine; on removal of the formaldehyde from the compound by boiling or by the addition of ammonia, unchanged starch is regenerated.

- Effect of Glycerin on Antiseptics** H. P. Goodrich  
J. Soc. Chem. Ind., 1917, p. 610

Although the solubilities of many antiseptics is greater in glycerol than in water, the glycerol causes a decrease in the germicidal properties; thus a saturated solution of thymol in a mixture of equal volumes of water and glycerol has no better antiseptic power than the much more dilute saturated solution of thymol in pure water. Similarly with boracic acid; a saturated solution in water is much more efficacious than a saturated solution in aqueous glycerol. Other antiseptics, such as mercuric chloride and phenol, show a similar effect.

## From Eastman Kodak Research Laboratory

- Photomicrographs in Color** C. E. K. Mees  
Amer. Phot., August, 1917, p. 448

### Communication No. 50

Lantern slides representing photomicrographs of stained sections should, in order to give satisfaction, closely resemble the appearance of the section itself. This can be attained by making the print in stained gelatine instead of by the usual photographic process.

The process of making such a print is as follows: Lantern plates (Seed or Standard plates are satisfactory) are sensitized by bathing for five minutes in a 2½% solution of ammonium bichromate containing 5 cc. of strong ammonia to the liter, the temperature of the bath being not above 65° Fahrenheit. The plates are then rinsed for two or three seconds in clean water, drained and dried as uniformly as possible, the plates being kept in the dark during drying. The sensitized plates are then exposed through the glass under the negative to the light of an arc lamp, the average exposure being about three minutes at eighteen inches distance. Printing cannot be done by daylight or sharp images will not be obtained. The exposed plates are then developed by rocking in trays of water at about 120° Fahrenheit until all soluble

are then rinsed in cold water, fixed in hypo, and washed free of the hypo. They are then ready for staining.

The staining is done with a 1% solution of dye containing 1% of acetic acid, the dye being selected to imitate most closely the original stain of the section, the time of dyeing being chosen so that the necessary depth is obtained. When sections stained with two different colors are being photographed negatives are made through suitable color filters and then dyed in the two stains and placed face to face so that a two color slide is obtained.

Suppose a section is stained red and green. Two negatives are made on panchromatic plates—one with a red filter, which causes the green to appear as clear spaces in the negative and will not record the red, and the other with a green filter, which will record the red and not the green. The slides made as described from these in bichromated gelatine are stained—that from the green negative with the original red stain. The filters required can be chosen from the set of filters for photomicrography prepared under the name of Wratten M filters. The choice of the filter is decided by visual trial under the microscope, the filters chosen being those which most nearly absorb one color and transmit the other. Thus, photographing a section stained with Delafield's hematoxylin and precipitated eosine the A filter (red) shows no trace of the eosine and gives a good, strong negative of the hematoxylin. The B and C filters are used together for the other negative, giving a blue-green color and record the eosine and hematoxylin both fully, and from these two negatives positives are made and stained with a blue and a red dye.

# The Photographic Production of a Lithographic Key on Zinc and Aluminum J. I. Crabtree

B. J., 1917, p. 208

National Lithographer, 1917, p. 45

Communication No. 48

In order to facilitate the work of the lithographic artist when drawing in crayon on zinc or aluminum, it is possible first to prepare a photographic image on the metal plate to serve as a key, which may then be worked upon in the usual way. This key may be obtained by an application of the blue-print process to metal, though in order to prevent the final image from washing off the plate it is necessary to pay attention to the following details.

A suitable sheet of grained zinc is first coated with 1% solution of citric acid and dried immediately. The following sensitive coating is then applied with a brush and likewise dried immediately:

						Metric	Avoirdupois
A	Ferric Ammonium Citrate (Brown Scales)	-	-	-	-	30 g.	1 oz. 25 grs.
	Water to	-	-	-	-	150 cc.	5 ozs.
B	Potassium Ferricyanide	-	-	-	-	30 g.	1 oz. 25 grs.
	Water to	-	-	-	-	150 cc.	5 ozs.

For use: 3 parts A; 1 part B.

After exposing under a negative until the shadows are slightly bronzed, the plate should be washed in water, when a blue image results, though a much stronger image may be obtained if the plate is developed in a solution consisting of equal parts of a 1% sol. of potassium ferricyanide and a 1% sol. of citric acid. The highlights of the zinc may be considerably whitened and the contrast increased by treating the zinc with a weak solution of nitric acid and alum.

gelatine is removed. Under-exposure is indicated by the highlight detail washing away and over-exposure by the film being insoluble to too great a depth. The plates

A key may be prepared on aluminum in a manner similar to the method for obtaining the same on zinc. A suitably grained sheet of aluminum is first coated with a 1% solution of oxalic acid and dried quickly before a fan. The aluminum is then coated with the ferric ammonium citrate-potassium ferricyanide mixture, as in the case of zinc, and rapidly dried. After exposure, the plate should be developed in plain water, though if a solution consisting of equal parts of 1% oxalic acid and 1% potassium ferricyanide be used, a bluer and slightly more intense image is obtained.

## The Photomicrography of Paper Structure

M. B. Hodgson

J. Ind. Eng. Chem., 1917, p. 782

### Communication No. 49

In the study of the ultimate structure of paper much valuable information can be obtained by means of photomicrographs of cross-sections of the paper stock.

In the course of some recent work on the penetration of various materials into paper stocks as thin as .05 mm., the following method was adopted:

The paper of which a section is desired is mounted between two pieces of gelatine coated film, ordinary Kodak N. C. film being used, the gelatine being moistened to cause it to adhere to the paper. The paper held between the pieces of film is then placed between two pieces of moderately dry castile soap. This "sandwich" is then placed in the chuck of the microtome with the paper edge normal to the razor edge. The use of the gelatine is important as it forms a firm but slightly resilient binder for the paper and prevents tearing of the surface fibers. The micrometer adjustment permits of sections from .001 to .050 mm. in thickness being made. Sections are then cut in the usual manner and mounted on slides in Canada Balsam diluted with Xylol.

In photographing such sections, the best results are obtained using orthochromatic plates with a yellow filter. In the present work Standard Orthonon plates were used with the Wratten "G" filter.

## Influence of Alcohol on Viscosity of Gelatine Solutions

### Report No. 367

Usually when the viscosity of a gelatine solution is measured at, say, 25°-35° C, the solution having been prepared below 70° C, it is found that the viscosities tend to rise in the first 24 hours on keeping at the lower temperature. This "lag" is more pronounced as the concentration of gelatine is increased, and is no doubt due to the sluggishness of adjustment of temperature equilibrium in viscous colloids.

The viscosity concentration curve of a series of gelatine solutions was determined, the concentrations of which ranged from 0.5-15%, and which contained a certain proportion of wood spirit (methyl alcohol) as a "hardener;" the viscosity measurements were made at 35°, readings being taken some 5 minutes after placing in the thermostat and again on standing in closed vessels up to 20 hours. In all cases the viscosity fell on keeping, instead of rising. This indicates that some other internal change is taking place in the system, in the opposite sense to the usual recovery of viscosity. It appears most probable that it is due to the alcohol producing a slow internal coagulation, the sol passing from the "emulsion" or emulsoid type to the "suspension" or suspensoid type, by partial dehydration of the gelatine. Both sols and gels of gelatine containing alcohol are less stable systems than the straight aqueous sols and this may affect the aggregation and behavior of the silver halide particles in emulsions and plates.

### Printing with a Mercury Arc

Report No. 377

The difference in quality of light between a mercury arc and a gas filled Mazda lamp has no effect in printing upon Artura Carbon Black paper; under the same conditions either light source will give the same quality of print.

### Lead Foil in Dental X-Ray Packages

Report No. 372

This investigation was undertaken to determine the effect of backing up x-ray film by lead foil. The theory involved in using such a lead backing is a simple one. When x-rays strike a body the effect on the incident beam of rays is much the same as when a bundle of ordinary light rays strike ground glass. That is, the rays are diverted or scattered in all directions, each atom of the substance struck diverting a certain portion of the rays. In this way it will be seen that some of the rays will return to the same spot where they first entered. Of those which strike the lead foil shielded half are stopped and absorbed; those which strike the unprotected part pass on through the support and cause a grainy fog over that portion of the negative.

This matter has been tried out exhaustively under varying conditions of technique and using various thicknesses of foil.

The effect produced by scattered radiation in the average dental negative making is not sufficient to warrant the extra trouble involved in enclosing the lead foil. The thickness of flesh in the average face is not great enough to produce much return radiation. The most noticeable amount is produced in making negatives of front teeth, where the major portion of the head is behind the film. It is difficult to notice much difference in negatives taken with or without lead backing. There is an added danger, too, of getting the film placed film side to the tube, and thus greatly reducing the effective exposure.

It is, however, a wise plan to advise the use of lead backing under film exposures where a wooden or brass bench is used in making radiographs other than dental. In the case of plates the scattered radiation is practically all absorbed by the glass.

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## Patent Abstracts

### U. S. Patents

1231710      D. F. Comstock, Assigned by Mesne Assignments      K2116  
to Technicolor Motion Picture Corporation

A Light Splitting Mirror adapted for use in color photography. It consists of a surface having irregularly distributed reflecting areas of small size, so spaced that the light reflected thereby will substantially equal the light transmitted.

1229546      J. E. Thornton, Assigned to John Owden O'Brien      K/43

A Three-Color Motion Picture Film consisting of three superposed and registered complementary colored positives.

1229553      H. F. Waite      X423

A Holder for X-Ray Dental Film having a pointer which automatically indicates to the operator the direction in which he should throw the X-rays.

1230744

C. W. Mable 0648-383

**A Method of Coloring Motion Picture Films.** A set of tinting ribbons are made having raised portions, which transfer the dyes to the appropriate portions of the film picture. These ribbons are made by painting a gelatine film with potassium bichromate except where the coloring spaces are to remain. When treated with water, the non-bichromated spaces form raised transfer portions.

1232359

L. Miller 0649

**A Method of applying titles to motion picture film.** When the pictures are printed on the film, transverse spaces are left between them and progressive titles are subsequently printed in these spaces.

1229275

C. F. Jenkins, Assigned to The Graphoscope Co. 067

**A Motion Picture System adapted to insure the use of safety film in school rooms and similar places.** The projector in the school room is driven by a special sprocket having extra large teeth at intervals. The safety film is provided with corresponding extra large perforations. The driving edges of the perforations in the safety film are so located that the latter can be used in projecting apparatus having the ordinary sprockets.

1228580

G. W. Miles 1412

**Method of Incorporating Filler with Fibre.** If an emulsion of wax or waxy material is introduced into the beater with the fibre, together with the filler, a much larger amount of filler can be retained in the fibre than by ordinary methods. (Paper, June, 1917, p. 17.)

1229882

O. Gallaway and G. R. Helsley 2151

**A Roll Film Camera in which the film chambers are carried in a swinging housing which can be closed by means of a dark slide.** When so closed, the housing can be swung out of the way and the camera focused on a ground glass in the usual way. When not in use, the ground glass is carried in a special compartment in the housing.

1232125

A. L. Trippel 2151

**A Roll Film Camera modified to permit ground glass focusing.** The film rolls are contained in special slidable casings. When it is desired to focus, one of these casings is moved across the camera into contact with the other casing, the slack in the film being suitably wound up, the focusing opening of the camera being thus freed for inspection.

1231878

C. E. Grenell 2152

**A Roll Film Camera provided with a device for preventing double exposure.** The camera has a sliding exposure shutter and pivoted safety shutter. These shutters can only be set by winding up a fresh area of film.

1232254

E. G. Ervin and F. C. Smith 2152

**A Roll Film Camera provided with a spring motor winding mechanism.** When the operator desires to wind a fresh section of film into exposure position, he merely presses a button and the motor automatically does the winding. The speed of the motor is controlled by a governor, and the motor is automatically locked when the camera back is removed.

1230399 H. J. Gaisman, Assigned to E. K. Co. 2153

A Roll Film Camera provided with an arrangement by means of which writing may be made and light printed upon suitable portions of the film. The writing is done through a window in the camera back normally closed by a hinged cover. The film is clamped beneath the window when the cover of the latter is open. When writing is done on the back of the film through the window, the sensitive face of the film beneath the stylus is brought into contact with a roughened surface, locally affecting the sensitive film. Light is then admitted to the portion of film beneath the window by means of a translucent bar co-operating with openings in the side of the camera.

1229945 J. S. Greene, Assigned to Commercial Camera Co. 2172

A Commercial Copying Camera of the type employing a web of sensitized paper. The developing apparatus in this camera is provided with a special lifter carrying a wringing roll which is automatically held inoperative when the lifter is submerged in the developer, but moves into wringing position when the lifter raises the print from the bath.

1230096 G. C. Beidler 2172

A Commercial Copying Camera of the type which uses a sensitive paper web. The exposed sections of paper are carried successively through developing and fixing baths by means of endless belts, so arranged as to minimize the transfer of chemicals from one bath to the other. The operating mechanism for the belts is timed so that the operator can hold the prints submerged a suitable length of time in the various baths.

1229515 G. N. Pifer, Assigned by Mesne Assignments to F. E. Stewart, Trustee 2193

A Coin-Controlling Mechanism for Automatic Photographing Machines.

1229896 E. Dake 241

A Photographic Printing Machine provided with a ground glass diffusing screen between the printing lamps and the negative. The distance between the ground glass and negative can be adjusted to vary its effect and suitable vignetting cards may be mounted upon the ground glass.

1230392 W. F. Folmer, Assigned to E. K. Co. 241

A Photographic Printing Machine provided with a special two-piece hinged platen or presser back. It also embodies a special automatic switch for controlling the printing lights and turning a safety light on and off.

1230532 E. C. Sterling 241

A Photographic Printing Machine in which the platen or presser back consists of two hinged members which are connected to the body of the machine and to the actuating lever by special hinges.

- 1231173 J. K. Knapp 241  
 A Photographic Printing Box that may also be used as a safelight. The end of the box is provided with a ruby glass opposite an electric lamp and the top of the box constitutes a printing frame, the platens of which are formed of curved spring sheet metal. When the platens are fastened down, the only light emitted from the box is that which passes through the ruby window.
- 1232219 J. A. Chadderton 241  
 A Printing Machine carrying in its top a main printing frame and a nested auxiliary printing frame.
- 1232164 A. Allen 242  
 A Print and Negative Holder for use in printing frames. By providing suitable gauges, uniform margins are insured on the print.
- 1234416 E. W. Sweigard 242  
 An improvement in pneumatic printing frames whereby the air seal is made more effective.
- 1233109 L. D. Nesbit 25207  
 An Apparatus for developing and intensifying photographic plates. Consists of means for inserting and removing plates in a series of tanks. Applies particularly to the intensification of wet collodion negatives.
- 1230500 1230501 R. Mathews 2626  
 A Clock-work Mechanism for actuating a camera shutter after a predetermined time to enable the operator to include himself in the picture. It may also be adjusted to give accurately a time exposure.
- 1230568 H. L. De Zeng 2629  
 An Iris Diaphragm comprising a rotatable ring and a stationary ring, one of which rings carries pivoted leaves, while the other contains slots engaging actuating projections on the leaves.
- 1232333 C. B. Knott 2645  
 A Focusing Device for Cameras. A range finder of the pivoted mirror type is co-ordinated to move with the lens carriage through a series of links.
- 1231581 E. H. Farmer 2658  
 A Photographic Apparatus using plates or cut films and designed to avoid the use of a dark room. The plates are contained in a special hinged holder inserted in the bottom of the camera. To expose a plate, the upper hinged half of the holder is moved to a vertical position with the attached plate in the focal plane. After the plates have been exposed and the holder closed, the plates are developed by pouring developer into the holder. Thus the plates may be loaded into the holder at the factory and remain therein until finally removed after fixing and washing.

1231740 J. Horak, Assigned to Burke & James, Inc. 275

A Retouching Apparatus in which the frame carrying the negative is rapidly oscillated in minute circles, so that a pencil held against the negative will trace small circular lines and spots at the points to be retouched.

1232418 C. E. Akeley, Assigned to Akeley Camera, Inc. 312

A Motion Picture Camera provided with a cutter which severs and bends back a small tongue of film and simultaneously inserts a small ground glass in the resulting opening at the focal plane.

1230576 J. A. Golden 315

A Motion Picture Camera for taking pictures in zigzag fashion upon roll film of the type used in hand cameras. The film is shifted laterally by a Geneva movement and is wound up step by step by a clock-spring device.

1231961 B12337-1914 E. M. Stoffels 317

A Motion Picture Device using glass plates. The plates are fed into exposing position one at a time from an upper magazine and after exposure are dropped into a lower magazine. The pictures on the plates are taken in transverse zigzag series.

1229673 V. W. Thomas, Assigned to C. L. Peyton 3202

A Framing Device for Motion Picture Machines. The lower sprocket is mounted upon an eccentric bearing. By rotating this bearing the sprocket may be moved upwardly or downwardly.

1232328 J. Keller 3202

A Framing Device for Motion Picture Machines. The lower sprocket is vertically adjustable while the machine is running. Suitable gearing alters the speed of the shutter during the vertical movement of the lower sprocket, so that the sprocket and shutter will always be in synchronism.

1229139 J. L. Ritchie and G. L. Yaste 3204

A Motion Picture Film Binder and Protector. It consists of a loop of spring steel of a width to fit between the flanges of the ordinary motion picture reel and of a length to pass completely around the contained film.

1229697 H. P. Allen, Assigned to New Jersey Patent Co. 3204

A Reel for Motion Picture Film. The hub is provided with a special slot containing smooth radial pins for engaging perforations near the end of the film. This avoids mutilating the end of the film and permits such end to slip off the reel easily when the film is unwound.

1229908 W. E. DeWitt 3207

A Motion Picture Projection Apparatus having a small auxiliary projecting system arranged on the side of the lamphouse so as to throw an image of the carbons upon a nearby wall or screen. The operator can thus see the condition of his light without going back to the lamphouse.

1230201 H. S. Morton 3209

A Safety Device for Motion Picture Machines. Whenever the tension on the film is slackened, or the film broken, or whenever the tension on the film exceeds a certain critical value, an electric circuit is completed and a fire shutter is released so as to cut off the light from the film.

1232326 J. Keller 3209

A Motion Picture Machine provided with two fire doors which are so arranged that no light will be admitted to the film until the machine is in operation, the film under suitable tension, and the cap-piece, which covers the loop in the film, is properly locked. The motor which drives the machine is automatically stopped whenever one of the fire doors cuts off the light.

1230351 H. E. Watson, Assigned  $\frac{1}{2}$  to F. B. Thompson 3209

A Safety Device for electrically driven motion picture machines. Whenever the film becomes torn, or whenever one of its edges gets out of mesh with the sprockets, an electric circuit is closed, causing a chain of mechanism to stop the motor and interpose a fire shutter between the lamp-house and the film.

1230633 F. von Madaler, Assigned to The Rotary Photographic Co., Inc. 323

A Combined Motion Picture and Talking Machine mounted in a single cabinet. The sound apparatus and picture apparatus are driven from a common motor either synchronously or independently, as desired by the operator.

1231727 L. Gaumont, Assigned to Société des Etablissements Gaumont 324

A Projection Screen for showing pictures by transmission. It consists of a wide mesh fabric coated with gelatine carrying in suspension baryta and finally varnished.

1231958 R. K. Snow and A. B. Perdue 325

An Apparatus for projecting opaque motion pictures mounted in a helical series on a cylindrical drum, the drum being fed by means of an inclined screw-threaded shaft.

1231360 A. S. Howell, Assigned to Bell & Howell Co. 33-3202

A Pneumatic Film Controlling Device for Motion Picture Machines. Air under pressure is introduced against both sides of the film in the passages leading to and from the exposure or projection opening. This suspends the film with the minimum of contact and friction upon the gate and consequently minimizes wear thereon.

1229329 A. R. Selden 361-0631

An Arrangement for Manipulating Motion Picture Cameras. The camera is mounted upon a support having a single leg, so that the operator can rock it to any desired angle with one hand. His other hand operates a crank attached to his belt, this crank driving a flexible shaft connected with the camera.

## British Patents

B105920

A. de Brayer G1-153

**Storing, Conveying, and Applying Chemicals.** Chemicals for use in photographic operations are prepared in a pasty form by incorporating them in a finely divided condition in a syrupy or viscous material which is soluble in water and does not exercise any deleterious effect upon the chemicals. The paste may be enclosed in collapsible tubes of tin or other material, the interior surfaces of which may be coated with a varnish to prevent reaction between them and their contents. The orifices of the tubes may be of such a size that known lengths of the extruded paste may contain known quantities of the chemicals. A coloring material such as an aniline dye may be incorporated in the paste so that the emulsion of a plate etc., may become stained with the dye etc., when treated with the chemical, the removal of the dye during washing then indicating the sufficiency of the washing.

B106373

J. Henley 068-326

**Cinematography.** Cinematograph pictures with stereoscopic effect are presented to view by projecting or exhibiting the elements of each stereoscopic pair in succession and providing means by which one eye of the spectator has a clear view of the appropriate picture and the other eye has a dim view of that picture, the clear and dim views alternating from eye to eye with successive pictures. The film may be viewed directly in a cabinet containing an electric lamp and a pair of viewing lenses, a steel ribbon having openings alternating with and spaced from groups of fine perforations being fed across the lenses simultaneously with the feed of the film so as to provide the desired views and also to act as a shutter. The steel ribbon may be replaced by an opaque celluloid or gelatine ribbon having alternating, spaced, transparent and semi-transparent portions or by an oscillating member having similar openings etc. According to Provisional Specification 13562/16, the oscillating member has two openings between which is a group of perforations. Color screens may be provided for producing multi-color effects. The pictures when projected are viewed with the aid of an apparatus which is held by the spectator and comprises a colored gelatine or celluloid sector mounted on a rod which is vibrated in synchronism with the film feed movements by means of electro-magnets and a pole-piece, the sector resting before each eye alternately during the projection periods. The currents passing to the electro-magnets are controlled automatically by the projection apparatus. The sector may comprise two portions of complementary colors, when the alternate pictures projected are separate color records, each portion resting before one eye so as to serve as the color screens. Each series of alternate pictures on the positive film is printed from one of two negative films exposed simultaneously in two cameras, the axes of which are directed to the principal subject of the picture. According to Provisional specification 11449/16, the background of one series of alternate pictures may be almost or wholly eliminated.

B104643

R. A. Fessenden 069

**Sound-Reproducing Apparatus.** A sound-reproducing instrument for communicating speech or music to an audience in a room or hall has a diaphragm comparable in size with the cross-section of the hall; and the diaphragm may be utilized as a screen on which cinematograph or other pictures, related to the communicated sounds, may be displayed.

B105589

H. C. Bullis 069-323

**Talking Picture Apparatus.** Talking picture apparatus is arranged to record sounds and pictures simultaneously on independent film strips, and means are provided for marking each film with a series of identification marks so as to facilitate assembly for simultaneous reproduction. The recording apparatus comprises pairs of reels for winding and unwinding the sound and picture films, which are arranged side by side. A third opaque strip wound on drums and overlapping the nearer edges of the films, is provided on its edge with perforated characters, such as numerals. The three films are driven by toothed rollers, one rotating continuously and the other intermittently, a loop being interposed in the usual way. Each roller has four rings of teeth, the two inner rings engaging both the marking-strip and the perforated edge of one of the records. Sounds are recorded on the film by an incandescent electric lamp having a single horizontal filament, the lamp circuit being connected inductively to a microphone circuit. The steady currents in the microphone and lamp circuit may flow in the same or opposite direction in the transformer coils. The light is focused through the slot to produce a transverse line on the sound film by a cylindrical lens of double convex section and with curved ends. Immediately over the sound-recording aperture is arranged a lamp adapted to print the identification marks through the edge of the marking-strip on to the edge of the sound-recording film. A similar lamp is arranged above the picture aperture to print corresponding marks on the edge of the picture film. The identification marks on one edge of the marking-strip are set forward relatively to those on the other edge to allow for the film in the loop. When numerals are used, this gap is preferably arranged to correspond to ten pictures spaces, so that the numerals opposite each other differ by ten. After separate development, the negative sound and picture films are used to obtain positives by contact printing or otherwise, and the positives are assembled by means of the identification marks, and, if desired, cemented together. The reproducing-apparatus comprises drums for the films and two toothed driving-rollers, one rotating continuously, the other intermittently. Each roller has three rings of teeth, the central ring engaging perforations in the overlapping edges of the sound and picture films, the marking-strip not being required in reproducing. The sound-reproducing device comprises a lamp focused by lenses through a slit on to the sound-film, the varying transparency of which allows light of variable intensity to fall on a selenium cell connected to a telephone receiver.

B106528

J. Burns 069

**Cinematograph Apparatus.** Directions for actors etc., are projected on to the screen so as to be visible only to the actors, an obturating-device being provided to hide the directions from the spectators. The directions are projected upon a surface at the back of a recess placed at an edge of and behind the picture screen. The obturating-device may also be placed in front of the picture screen, the directions being projected on the part of the screen covered by the obturating-device.

B106643

G. Eitken 07131

**Photomechanical Printing Surfaces.** A design is drawn with an opaque pencil or the like on a transparent material having a grained or roughened surface, and used as a positive in the production of intaglio printing surfaces. The material may comprise ground glass, or a gelatine film made by allowing the gelatine to set on ground glass.

B106680 A. E. Walsham, A. H. F. Perl and A. Bennett 2109

**Living Portrait Camera.** The device consists of a plate holder to be attached to a camera for use in the production of "moving portraits." The plate is held between two or more fixed and adjustable slots while the line screen, which is adjustable in relation to the plate, is secured by two plates in a metal slide which is mounted on rods and guided in the plate holder and capable of slight movement in one direction, the guiding being accomplished by means of slots engaging in fixed pins. In order to effect the movement there is provided on the outside or rear portion of the plate holder a long armed lever, the pointer end of which is provided with a snap fastener, enabling it to be secured in any one of its successive positions.

B105898 A. S. Cramer 215

**Photographic Cameras.** A camera comprises a frame made from a stamped metal blank of the form having a front part containing a recess for the lens and tabe by which a shutter-carrying plate is attached. The side members of the frame have extensions stamped into the form, and provided with slots for the reception of the film-pools. The frame is completed by means of stamped plates at the top and bottom and the whole enclosed in a box. The shutter and its trigger are pivoted on tange stamped up from the plate. Stops for limiting the movement of the shutter are similarly formed.

B105410 W. J. Rider 221

**Displaying Illuminated Pictures, etc.** The apparatus comprises a projection apparatus, a reflector of optical silvered glass, and a screen upon which the pictures, announcements, etc., are displayed. The reflector is enclosed in an air-tight box of which the screen forms one side. The matter to be displayed is carried on transparent plates mounted on an intermittently rotated disk, below which is the lamp and condenser. Above is the projection lens. The upper part of the casing is fitted with an air-tight box having the reflector and display screen.

B105685 J. Halden and Co., and J. B. Halden 241

**Printing-Apparatus with Flexible Tensioned Coverings.** In printing-apparatus of the type described in Specification 10183/12, the flexible cover is made in strips. Each strip is secured at one end to a rod or other stationary part of the frame, passes over one of a number of separate rollers mounted loosely on the rod, and is connected at the other end by spiral springs or other elastic connection to the frame. The elastic connections may be adjustable and may be applied at the ends of the strips which are connected to the rod. Alternate rollers may be of different diameters from the others so that the strips may be made wide enough to overlap.

B105401 M. A. Pyke 2833

A device for exhibiting composite pictures or photographs with changing or animated effects, comprising a number of pictures etc., arranged in alternating bands, and a superposed line screen, the pictures and screen being relatively movable, is provided with resilient means to press the picture and screen into contact.

B1C6681 A. E. Walsham, A. Bennett and A. H. F. Perl 2833

**Living Portrait Mounts.** The invention relates to the mount in which the composite print is held in register against its ruled line screen and moved in relation thereto. Several methods of accomplishing the movement are shown in the patent.

B105467 A. Lleo and C. Baradat 313

**Cinematograph Apparatus.** The mechanism of a cinematograph camera is driven by an electric motor mounted within the casing and supplied with current from a storage or other battery.

B104869 H. C. Menard 3201

**Converting Continuous into Intermittent Motion.** Relates to devices for converting continuous rotary motion into intermittent rotary motion, applicable for use in apparatus for taking or projecting cinematographic views. A pin-disk or its equivalent, acting intermittently on a Maltese cross or other device, is driven with variable velocity ratio from a continuously rotating shaft, the pin-disk making one revolution for each revolution of the shaft. The invention is shown applied to a cinematograph, the shaft of which is rotated by hand or by an electromotor and drives the shutter directly or by means of multiplying-gear. The pin on the gear is caused to describe an angle of 90 degrees during its engagement with the cross, whilst using a shutter having alternately opaque and open sectors each of angle of 60 degrees. This is effected by driving the pin-disk with variable velocity ratio from the shaft, so that the pin, in driving the cross, moves through 90 degrees whilst the shaft rotates through 60 degrees, and during the stoppage of the cross, moves through 270 degrees whilst the shaft rotates through 300 degrees. The device may be used in cinematographic apparatus to drive claw apparatus acting on the film instead of with a Maltese cross.

B105970 P. M. Pierson 3203

**A reciprocating shutter for cinematograph apparatus** is operated by the drive shaft of the camera. A frame is fixed to the front wall of the camera and is provided with a slide-way for the reciprocating shutter which controls the opening behind the lens. The shutter is pressed outwards against the slide-way by a spring attached to the front wall of the camera, and is reciprocated by the connecting-rod, the slotted end of which engages with a pin on the shutter. The connecting-rod is operated by the crank-disk mounted on the shaft, which also carries a bevel-wheel engaging with the bevel-wheel on the drive shaft of the camera. A sprocket drum over which the film passes, is also driven by the shaft through the toothed wheels.

B105056 A. Lampugnani 3205

**In an electric-arc cinematograph lantern,** a concavo-convex mirror is employed to replace the lenses of the usual condenser system.

B105243 H. R. Evans 322

**Cinematograph Apparatus.** Relates to cinematograph projectors, and comprises improvements in the film feeding and centring mechanisms, the lamp-house and lamp, and the means for projecting lantern slides.

B104884

J. Chanteux 324

**Optical Projection Apparatus.** Projection screens having a metallized surface are covered with one or more coatings of a transparent and opal solution. The solution may comprise white gum and silver white in water. The metal may be applied to the screen in a paste comprising, for example, powdered aluminum, brown varnish, siccatif and turpentine.

B104620

R. C. Givler and M. Givler 325

**Cinematograph Apparatus.** A cinematograph apparatus comprises a box, in which is mounted a rotatable shaft provided with slots in which are fixed the flexible pictures. On rotation, these pictures engage the edge of a mirror, in which their reflections are successively viewed through the opening. The shaft is rotated by means of a lug, polygonal in cross-section and detachably connected to the handle by means of spring catches. The other end of the shaft is mounted in a bearing hinged to the box.

B105675

A. Lleo and C. Baradat 325-3205

**Cinematograph Apparatus.** In a machine in which a dynamo is driven from the film-actuating means, the driving-belt for the film-feed is tensioned by a roller carried by a weighted bell-crank lever. By lifting the weight the film-feed stops but the dynamo continues to be driven. The mainshaft is driven by pedal gearing comprising two pedal levers, the pedals of which describe an inclined arc with respect to the floor.

# Monthly ABSTRACT Bulletin



October, 1917

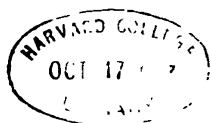
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# Monthly Abstract Bulletin

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*F. F. [illegible]*  
*[illegible]*

### Note

Attention is called to the fact that photostat copies of any of the articles abstracted in the *Bulletin* may be obtained immediately by telephoning the Library at Kodak Park.

## Photography

- The Sole Swedish Dry Plate Factory** J. Hertzberg A11  
 Nordisk Tidskrift for Fotografi, July, 1917, p. 109

An account of a new factory opened by the Swedish Dry Plate Industry Corporation at Kvarngatan 3, Sodor, Stockholm. Describes briefly the sequence of operations in the manufacture of gelatine dry plates. (A translation of this article has been made).

- Wet Gelatine Emulsions** B. J., 1917, p. 414 C11 ✓

A report of the lecture and demonstration on this subject by Mr. Charles M. Thomas at the Royal Photographic Society.

- Some Imaginary Troubles and Unnecessary Conveniences** (1  
 B. J., 1917, p. 434

Calls attention to a number of suggestions which frequently recur in photographic literature but which do not seem to supply any real want. Among others mentioned are methods for deferring fixation by washing or treating the negative after development and then fixing at a later date, and for the use of developers containing a dye so that they can be used in daylight.

- Monomet-Hydroquinone Developer** G1-163  
 B. J., 1917, p. 442

A number of correspondents send formulæ for a concentrated developer.

- Fixing Baths** G6  
 Mov. Pict. World, Sept. 1917, pp. 1542, 1698

- Remedying an Over-Developed Negative** A. E. Thomas H1  
 B. J., 1917, p. 442

Correspondent suggests conversion of the silver of a negative into a blue deposit by toning in order to weaken its absorption for actinic light.

- Drying Negatives** H3  
 Kodakery, Sept., 1917, p. 22

- Toning Platinum Prints** J-81  
 B. J., 1917, p. 405

A method is given for toning platinum prints with gold.

- Silvering Glass Mirrors** W. F. A. Ellison  
 B. J., 1917, p. 407

Correspondent makes some comments on the process for silvering glass published by Mr. Crowther (see B. J., p. 375.)

- Color Vision and Color Photography. III C. W. Piper K  
 B. J. Color Supplement, 1917, p. 29

The Hering Theory. The problem of white and the mixture of colors by binocular vision.

- Douglas Natural-Color Motion Pictures K/24  
 Photo Era, Sept., 1917, p. 143

The inventor claims that color photographs can be made with any camera by the simple addition of an attachment to the lens. It is said that a negative and a positive are made as at present but that a special chemical treatment "brings out the imprisoned color." This treatment is stated to cost half a cent a foot.

- Decennia Practica—Color Photography K 33  
 B. J. Color Supplement, 1917, p. 31

This installment deals chiefly with the method of production and the properties of the Autochrome screen plate.

- Restoring and Copying Daguerrotypes B. E. Havelock L7/61  
 B. J., 1917, p. 424

Explicit directions for cleaning daguerrotypes with cyanide and for copying them; the construction of a special illuminating box being described.

- Restoring Daguerrotypes L7/61  
 B. J., 1917, p. 443

A note on this subject by W. E. Debenham.

- Restoring Tarnished Daguerrotypes C. E. Bold L7/61  
 Phot. Focus, July 25, 1917, p. 52

- The Physical Properties of Intensifying Screens T. T. Baker X424  
 J. Roent. Soc., 1917, p. 49

Some general properties of x-ray intensifying screens are considered from the point of view of photographic efficiency. The author advises exposure through the screen to the plate, instead of through the plate to the screen as is the almost universal custom. (This procedure might be efficient in dealing with films, which are the most efficient material to use in screen exposures.) Some erroneous ideas of the development of screen and x-ray negatives are also given. In general, the portions of the paper dealing with the phenomena of fluorescence and the care of intensifying screens, are good. The portions dealing with photographic theory are a mixture of good and bad.

- 4 The Latent Image as a Ferment H. Thiebaut 017  
 Il Corriere Fotografico, 1917, p. 3110

Suggestion for a Theory of Development. (Article translated from the Photo-Revue.) The author considers that the reaction with the developer is a reaction of the latent image; the latent image is thus of an oxidizing nature and is in consequence

destroyed by reduction in development. An analogy is drawn between this and the behavior of ferments. The author is evidently better acquainted with biological than with physical chemistry.

### The Ideal View Angle

019

B. J., 1917, p. 410

A discussion of the maximum angle which can be covered with comfort by the eye and which consequently represents the most natural perspective.

### Covering Power and Definition

019

B. J., 1917, p. 411

A clear and simple article on these subjects directing attention especially to the great covering power of some modern anastigmats of short focal length, thus enabling them to be used as wide angle lenses.

### Essentiality in Hand Cameras. II

G. M. Nicol 024

B. J., 1917, p. 399

This part deals with the choice of plate or film for the hand camera and the selection of the type of the camera, and adds some notes on the salient advantages and disadvantages of different types of cameras.

### Carbon Portraits

031/82

B. J., 1917, p. 393

A discussion of the use of the carbon process for portrait printing and of the reasons why the process is not more largely used. It is suggested that the Eastman Portrait film is particularly convenient for avoiding double transfer in carbon printing.

### Some Further Notes on Sketch Portraits

J. S. Adamson 031

B. J., 1917, p. 412

This is a supplement to Mr. Adamson's recent articles giving some further notes on high-key lighting, on papers for sketches, on red chalk tones and on the reproduction of all pencil sketches.

### Commercial Photography: Photographing Furniture

032

Process Eng., 1917, p. 106

General article on the photography of furniture, in which it is stated that satisfactory photographs of furniture date from the introduction of the Wratten Panchromatic plates. Particulars are given as to the methods of working the plates and as to the filters which should be used for different subjects.

### Drying Marks on Negatives

041-H3

Kodakery, Sept., 1917, p. 14

Drying marks on negatives caused by uneven drying of a softened film, or film which has been spattered with water, or on which drops of water have been left during drying, may be removed by prolonged soaking of the film in water, removing all surface moisture, and drying uniformly.

## Halation

C. E. K. Mees 041

Kodakery, Sept., 1917, p. 18

An article on the subject, illustrated with diagrams, showing the path taken by light rays when falling on a photographic plate. Owing to the grains of silver bromide in the gelatine emulsion, the light is reflected from one grain to another, causing a diffusion of the light or "irradiation". Thus in the case of the image of a bright light spot from an incandescent lamp in the distance, the image on a photographic glass plate is not sharp, and is usually surrounded by a ring or halo. The method of formation of this halo is explained, it being due to a total internal reflection of the light rays.

## Preparing Transparency Plates by the Albumen Process

045/65

Phot. J. Amer., 1917, p. 387

Practical instructions for the preparation and development of Bromo Iodide Albumen plates.

## Enlarged Negatives and Transparencies

046-049

Phot. Min., Aug., 1917

Practical methods and formulas for the making of enlarged negatives, with an account of the advantages over the every-day process of enlarging direct onto the paper. The making of transparencies for decorative purposes.

## Photography in India

F. N. 055

B. J., 1917, p. 404

This note contains a number of suggestions for manufacturers with regard to the trade in India. The author considers that there would be considerable opportunity for an extension of trade after the war, especially in the direction of supplies for the white troops in the country.

## Sepia Toning

C. L. Gregory 0645

Mov. Pict. World, Sept. 1917, p. 1854

The method of bleaching the image to silver bromide, washing, and treating with a sodium sulfide solution is recommended. If this method is used, in spite of the statement to the contrary, it is very necessary to under-develop the black and white positive if anything like a sepia image is to be obtained, and with ordinary positive film it is usually necessary to add hypo to the sulfiding bath if development is carried to completion. The use of an acid hardening bath is also recommended after sulfiding in warm weather. With water at all warm, this would produce reticulation. It is advisable to harden the film before it becomes swollen; that is, either use the hardener before bleaching, taking care to thoroughly wash, or better, use a 3% solution of formalin.

The Stencil Process of Coloring Cinematographic  
Positives

A. S. Cory 0648

Mot. Pict. News, Aug., 1917, p. 1038

A description of the method of multiple tinting of motion picture film as originally worked out by Pathé and known as PathécOLOR. Single copies are colored by hand, but when a number of duplicates are to be made, these are produced by

**stenciling.** The stencil band is cut from a celluloid film band by the aid of a photographic machine. This consists of the usual tracer and cutting tool, and the various color patches are traced out by hand on a ground glass on which an enlarged image of the positive is projected. Just as many stencil bands must be cut as the number of different dyes it is intended to employ. The stencil is then placed in contact with the black and white positive and the two films passed over a rotating brush charged with color which works the same into the film. A second stencil is then registered in contact, and a further tint applied. It is not customary to cut stencils unless three or four hundred copies are required.

**Standardization**

067

Mot. Pict. News, Sept. 1917, p. 1875

Mov. Pict. World, Sept. 1917, p. 1377

The Society of Motion Picture Engineers has recommended the adoption of various standards, including three different diameters for the projector lens tubes, a standard picture aperture, and the B. and H. standard of film perforation with the dividing line between the film image, and located in the center of the space between the perforations. The author makes a plea for the standardization of the take-up bobbins in cine cameras. On the best type of cameras the bobbin as supplied by the film maker may be slipped over a spindle, but in some cameras a larger core is used necessitating either rewinding or the pulling out of the center of the film resulting in wastage.

**Making pictures of the Army and Navy**

K. Banning 083-02

Camera, 1917, p. 480

Information issued by the Director of the Division of Pictures for the benefit of photographers and artists wishing to make pictorial records of army and navy work.

**Photographing from the Air. III**

H. Voorwalt 083

Lux, Foto-Tijdschrift, July, 1917, p. 213

This part of the series deals with color photography from the air, which is stated to be practicable with a triple camera, though the exposure mentioned would not be sufficiently short to get sharp pictures, and it is doubtful whether any good results have been obtained from aeroplanes. The author also deals with the camera used by the Dutch army. This is a plate camera using a lens working at  $f/3.5$  of 10" focus with a three times yellow filter. The lens is fitted with stops and the camera has a direct vision view holder. The plates are carried in a magazine carrying six plates, the magazine being of the familiar double box type similar to that used in the Veroscope. The focal plane shutter is apparently not set automatically but has to be set for each exposure. All photographs ordinarily are through the filters. (A translation of this article has been made and is available in the Library.)

**Storing Paper**

137

B. J., 1917, p. 392

The editor calls attention to some cases of rapid deterioration of bromide paper which have come to his notice, the deterioration being due to storage in a damp, warm atmosphere or where the paper is exposed to gas fumes.

**Flashlight Powders**

1592

Phot. J. Amer., 1917, p. 384

Formulae for seven flash powders.

## A Triple Exposure Camera

216

Process Eng., 1917, p. 102

The apparatus is equivalent to three complete cameras containing three lenses, bellows, and half-tone screens, but exposing on the one plate from the three different copies, arrangements being made to take a number of photographs on the same plate, repeating the exposures on different portions of the plate. Exposure is controlled by an automatic timer which starts the exposure for all three lenses, changes the stops, shuts off the exposure, and drops the necessary white curtain for flashing. The camera is fitted with an automatic focusing arrangement. The article is illustrated with photographs of the camera.

## A Vertical Enlarger

W. J. Shaw 222

Amer. Phot., 1917, p. 495

Describes an artificial light enlarger of the vertical type which has several ingenious features.

## A Method to Test Shutter Speeds

R. V. Wilson 262

Photo Era, 1917, p. 114

An image of a fine slit illuminated by an incandescent lamp using alternating current is focused onto a piece of sensitive film fastened on the turn-table of a disc phonograph. The shutter is snapped while the tables turn at a known speed. The number of cycles of the alternating current being also known, the speed of the shutter can be determined by counting the number of images of the slit photographed in unit time.

## Optical Terms

263

Mov. Pict. World, Aug. 1917, pp. 934, 1074, 1222

## Optical Glass

A. S. Cory 263

Mot. Pict. News, Aug. 1917, pp. 1166, 1336, 1507,  
and Sept. 1917, pp. 1684, 1874

An account of the properties, method of manufacture, and the technical uses of optical glasses.

## Light-Filters and Large Apertures

266

B. J., 1917, p. 410

Attention is called to the possibility of the light-filter disturbing definition with long focus lenses of large aperture, and to the effect of pressure on a light-filter in bending it and thus producing a disturbance of the definition.

## A Device for Testing Photographic Color Filters

266

Mot. Pict. News, Aug. 1917, p. 387

A description of the Bausch & Lomb spectrum projector.

## The Mazda Lamp and Motion Picture Projection

3207

Mot. Pict. News, Aug. 1917, p. 1034

A description of the Scheck universal adapter for motion picture projectors, consisting of a suitable Mazda lamp placed before a parabolic mirror, and which is offered as a substitute for the usual arc lamp.

**The Weiss Film Waxer**

387

Mot. Pict. News, 1917, p. 1503

An apparatus manufactured by the Projection Supply Co., Cleveland, Ohio, for coating the edges of positive motion picture film with a thin film of wax during rewinding, in order to prevent an accumulation of gelatine on the tension springs during projection.

**The Least Amount of Light Visible**

Phot. J. Amer., 1917, p. 379

Article from the Eastman Kodak Publicity department.

## Photo-Engraving

**Transferring Printed Matter**

S. H. Horgan 07001

Amer. Printer, Sept., 1917, p. 34

Following is recommended: Soap  $\frac{1}{4}$  oz., water 1 pint, spirits of turpentine  $\frac{3}{4}$  oz. Apply to back of print and burnish in one direction only.

**Collotype**

W. T. Wilkinson 0724

Process Engrav., 1916-1917

A series of articles on this process has been running somewhat irregularly for some time past.

**A New Collodion Formula**

W. T. Wilkinson 07333

Process Engrav., 1917, p. 20

Suggests that in an emergency collodion can be diluted with equal amounts of solvents.

**The Mounting of Process Blocks**

Col. Bemrose 07338

Process Engrav., 1917, p. 45

A test of 100 blocks showed that only 20 were mounted correctly type high.

**Half Tones on Antique Paper**

S. Henry 07339

Amer. Printer, Sept., 1917, p. 36

A discussion on the conditions necessary to get good results on rough paper from half-tone engravings. The frontispiece is a very good example of this work.

**Photo-Engraving Industry Statistics**

Photo-Engravers' Bulletin, August, 1917, p. 32

The 1914 Census figures of the Department of Commerce show that in that year there were 376 plants, and that \$2,798,000 was spent for materials.

## Photochemistry

✓ Photo-inversion by Light

Hiikoo Saegusa 012

Chem. Abst., 1917, p. 2435

The action of reversing the photographic image is very intense for violet and blue rays, and becomes gradually less as the refrangibility of the rays decreases. The action increases with the intensity of incident light as well as with the duration of exposure, but reaches a maximum after which it does not increase. There is no increase on the action by superposing green and red rays upon violet and blue rays, even though the intensity of the former is greater than of the latter. Hence the less refrangible rays do not counteract the more refrangible ones in the reversal of a photographic image as Lüppo-Cramer believed. H. Saegusa therefore cannot agree with W. Abney's view concerning photo-inversion.

## Physics

✓ An Investigation of Radium Luminous Compound

C. C. Patterson,

J. N. T. Walsh and W. F. Higgins

Proc. Phys. Soc., 1917, p. 215

Determinations were made of the brightness of the compound in powder form and in paint; and curves are given showing the rates of decay of luminosity.

The Développement of a Source for  
Standard Wave-Lengths and  
the Importance of their Fundamental Values

C.E. St. John and H.D. Babcock

Proc. Nat. Acad. Sci., Aug., 1917, p. 505

The 6 min.—6 amp. iron arc, adopted as a source for the International Secondary Standards gives for large classes of lines wave-lengths vitiated by the pole effect. It is recommended that light be taken from a narrow equatorial zone of a 4 to 5 fold enlarged image of an iron arc of the Pfund type 12 mm. long carrying a current of 5 amperes.

Projection Engineering

R. B. Chilas

Trans. Ill. Eng. Soc., 1916, p. 1097

This paper deals with certain requirements for the light-source, in order to produce a steady picture on the screen of an intensity restful to the eye and yet great enough to give clear detail. The characteristics of the alternating current and direct current arcs are analyzed. It is pointed out that the present lens system permits the utilization of only 17% of the light, whilst the optical system of the searchlight projector has a possible efficiency of 75%; the paper closes with several suggestions for improvement.

Absolute System of Colors. II.

W. Ostwald

J. C. S. Absts., 1917, ii. p. 281

The general equation expressing color in the author's system involves three terms connected by the relation  $r \cdot w \cdot s = 1$ , where  $r$  refers to a pure color,  $w$  represents

white, and  $s$  black. The frequency of light in the visible spectrum is discussed, and a table is given showing the relation between the frequency and the classification of the various colors according to the author's system.

#### A Study of the Fouche Acetylene Light Standard

J. Baillaud

Ann. de Phys., 1917, p. 300

The author claims that this burner has the qualifications of a fundamental standard. The entire flame is used, the dimensions being defined and the consumption of gas (volume per unit time) maintained constant by means of a differential manometer. In short, the consumption of the burner characterizes the flame. It is found that the luminous intensity "I" of the burner is a linear function of the consumption "D," i. e.,  $I = a(D - D_0)$ . Investigations of various types of tips were carried out and studies of the effect of impurities in the gas, atmospheric pressure and the humidity of the air were made. It is of interest to note that the author employed photographic methods of photometry in this research.

#### Maintaining Photographic Standards

A. B. Hitchens ✓

Jour. Frank. Inst., Aug., 1917, p. 179

This paper consists largely of a review of the known method of measuring plate speeds by the H and D system. Several pieces of apparatus devised in the past by various workers in sensitometry are described.

#### The Physical Basis of Color Technology

M. Luckiesh

Jour. Frank. Inst., Aug., 1917, p. 227

In this paper, which is a continuation from the preceding issue of the same journal, a large amount of data is presented on the spectral transmission factors of about 100 different dyes of all colors. Some space is devoted to a theoretical treatment of the subject and various graphical methods for analysis of the data presented.

#### Submarines in Periodical Literature from 1911 to 1917

H. R. Hosmer

Jour. Frank. Inst., Aug., 1917, p. 251

This paper consists essentially of a very complete bibliography of the various papers on this subject published during the past 6 years, covering all phases of the subject, among which are the propulsion, armament, and equipment of the submarine.

#### The Purple Color of Lamp Globes

M. Luckiesh

Gen. Elect. Rev., 1917, p. 671

The introduction of manganese in glass, to neutralize the greenish tint due to iron oxide, produces a purplish color and a loss in total transmission. It is recommended that in outdoor illumination glassware the manganese be omitted.

#### Photometric Tests of Flood Lighting Projectors

S. L. E. Rose

Gen. Elect. Rev., Sept., 1917, p. 743

The author outlines the commercial tests essential to the determination of the beam candle power distribution of flood lighting apparatus, and tabulates constants necessary for calculating beam candle power in lumens under various conditions.

## Colloid Chemistry

### Study of the Swelling of Caoutchoucs

A. Dubosc

Le Caoutchouc, 1917, p. 9265

Measurement of the swelling rate and power of rubbers in different dispersion-liquids said to be better indicator of the "nerve" than viscosity measurements. Methods of working are discussed.

### A Simple Ultra-Microscope

C. C. Kiplinger

J. Amer. Chem. Soc., 1917, p. 1616

A simplified form of the "slit" ultra-microscope, using orthogonal illumination of a slit-width cell made by placing a cover glass on a plane faced piece of hard rubber, the solution being between. (Since the method uses a thin film between solid surfaces it cannot replace the usual slit ultra for the examination of colloid particles in free solution).

### Ultra-Microscopic Investigation of Tanning Phenomena in Jellies

W. Noeller

J. C. S. Abst., 1917, ii., p. 132

The structures developed by tanning agents in gelatine jellies are similar to those characteristic of the tanning of hide fibers. It is assumed that the main difference consists in the circumstance that on hides the fibrils are orientated, while in gelatine they are distributed in every direction; also that gelatine consists of alpha gelatine in structure-forming fibrils, and structureless beta gelatine. Tanning induces a re-orientation of the fibrils.

### Adsorption by Precipitated Barium Sulphate

H. B. Weiser

J. Phys. Chem., 1917, p. 314

Barium sulphate shows a marked tendency to adsorption of many other substances. Since any adsorbed substance seems to act as a peptizer, the sulphate is precipitated in the most freely divided form in presence of those substances which it adsorbs most. It shows a marked adsorption for its own ions. Details are given of the effect of various salts, etc., upon the state of subdivision on precipitation.

### The Theory of Dyeing

J. Traube

Ber. Chem. Ges., 1915, p. 938

The effect of the presence to the extent of 0.06% of each of 65 dyes on the time of melting at 26° C of a 2.4% gelatine gel was observed. The following dyes increased, more or less, the time of melting:—the basic dyes, Indazine N, Malachite Green BX, Nile Blue, Crystal Violet, Chrysaniline S, Gentian Violet BR, Diamond Phosphine R, Safranin G, Fuchsine, Thionine Blue, Methyl Green, Methylene Green BX, Bismarck Brown, Tannin Heliotrope, Neutral Rd, New Blue R, Toluidine Blue, Naphthindone 2B, Isamine Blue, Victoria Blue B; and the acid dyes, Erythrosine, Rose Bengal, Fast Red, Azo Blue, Thiocarmine R, Brilliant Walkblau. The following diminished, more or less, the time of melting:—the acid dyes, Crystal Ponceau, Congo Red, Orange I, Methyl Orange, Wool Violet S, Eosine, Acid Violet 6BS, Trypan Red, Indigo Carmine, Naphthol Green B, Anthraquinone Green GXN, Benzopurpurine B, Diamine Blue 3B, Naphthol Yellow S, Acid Green, Martius Yellow, Quinoline Yellow,

Azorubine S, Bordeaux R. Whilst for the following no appreciable effect was found: Methylene Blue, Rhodamine B, Chrysoidine S, Formyl Violet, Patent Blue V, Cyanol Green 6G, Cyanol FF, Guinea Green B, Brilliant Congo, Picric Acid, Fast Brown G, Light Green S, Alizarine Saphirol, Water Blue and Heliotrope 2B. It was thus seen that the greater number of the acid dyes have a swelling action on gelatine, and that the basic dyes mostly have the opposite effect. Impurities, such as dextrin in the basic, and sodium salts in the acid, dyes were proved to have little or no effect as compared with that of the dyes themselves. When added in dilute solution to a gelatine gel, the highly colloidal dyes showed the tendency to deposit on the surface of the gel and not to diffuse, whilst the highly disperse dyes diffused readily into the gel. The author had previously shown that swelling and similar effects observed on gelatine gels are applicable to other gels, and hence also to swollen fibers.

## Organic Chemistry

- The Estimation of Oxycellulose G. Kita 1411  
Chem. Absts., 1917, p. 2405

The amount of basic dye taken up by the sample is not directly proportional to the oxycellulose content.

- The Chemical Constitution of Cotton Cellulose H. Barthelemy 1411  
Caoutchouc, 1917, p. 9274

The author has developed yet another structural formula for cellulose, but brings forward no new evidence. The article, however, is worth reading as a cursory review of the problem.

- The Microscopy of Paper Fibres. Method of Staining to Distinguish Between Bleached and Unbleached Sulfite Pulp C.G. Bright 1412  
Paper, Aug. 29, 1917, p. 11

The method is based upon the fact that ferric-ferricyanide colors unbleached sulfite green as given by Cross and Bevan. To increase the contrast the fibres are then treated with a solution of Benzopurpurin 4B and Oxamine Brilliant Red BX. This gives the unbleached a blue color while the bleached becomes red. Formulas and manipulation are given.

- The Artificial Silk Industry L. P. Wilson 1512 1514 1515  
J. Soc. Chem. Ind., 1917, p. 817

Very full accounts are given of the nitro, cuprammonium, and viscose processes. Mention is made of the use of cellulose acetate, cellulose formate, ethylcellulose, and proteins. Methods are quoted for distinguishing fibres produced by the different processes, including cuts of photomicrographs.

- The Scientific Needs of the Rubber Industry B. D. Porritt  
J. Soc. Chem. Ind., 1917, p. 789

A plea for more research of a purely scientific nature.

# General and Inorganic Chemistry

## First Aid in the Laboratory

### First Aid in the Laboratory

Chemisch Weekblad, July 14, 1917, p. 646

#### INHALATION OF CHLORINE AND BROMINE

Inhale a mixture of turpentine and strong alcohol.

#### BROMINE ON THE SKIN

Wash the skin immediately with the following mixture.

- 1 part of 25% ammonia,
- 1 part turpentine,
- 10 parts alcohol 96% or better absolute alcohol.

The dilute soda solution which is usually recommended is insufficient, because the reaction between bromine and soda is slow and the bromine spreads in the skin more quickly than the remedy itself. Moreover, the bromine forms a loose combination with the skin and that may cause the wounds to become more serious if the bromine is not destroyed. If the solution of soda destroys it at all it is done very slowly, while the so-called "antibromine" immediately penetrates the skin and decomposes the yellow bromine combination. By using this mixture immediately no wound will be formed.

#### ALKALI WOUNDS

Wash with a mixture of 600 grams glycerine, 300 grams water, 100 grams 80% acetic acid. Cover the wound with boracic salve and renew it from time to time.

#### ACID WOUNDS

Wash with a mixture of 700 grams of glycerine, 100 grams of water, 200 grams 25% ammonia. Cover the wound with the following mixture: 100 grams vaseline, 15 grams paraffin-oil, 20 grams magnesium oxide. Renew it from time to time. As the organic acids penetrate right into the skin it is advisable to use subsequently an alkaline salve.

#### ETHEREAL OILS AND THE LIKE ON THE SKIN

Wash with 50% alcohol.

#### OILS IN THE EYES

Wash with an eye cup filled with 5% alcohol. The eyes can stand this strength.

#### ALKALI IN THE EYES

Wash with an eye cup filled with 3% boracic water or rub with your hand with 1% acetic acid.

#### ACIDS IN THE EYES

Wash with 3% solution of sodium bicarbonate and rub with your hand.

All these solutions must be ready and placed where they can be easily reached.

## From Eastman Kodak Research Laboratory

### The Preparation of Sticky Back Prints

J. I. Crabtree

NI-1697

Report No. 394

A suitable adhesive for coating the back of prints, so that on moistening the same, the print may be mounted on a suitable support, may be made as follows:

Water	-	-	-	-	-	5 parts
Fish Glue or Liquid Glue	-	-	-	-	-	10 "
Glucose (liquid)	-	-	-	-	-	5 "
Alcohol (denatured)	-	-	-	-	-	5 "

Heat the water and stir in the fish glue, glucose, and alcohol. Add a little carbolic acid to prevent fermentation, and thin down with water to the required consistency.

The following modified dextrin formula also gives good results.

Dextrin (yellow)	-	-	-	-	-	10 parts
Water	-	-	-	-	-	10 "
Acetic Acid (glacial)	-	-	-	-	-	5 "
Glucose (liquid)	-	-	-	-	-	5 "
Alcohol (denatured)	-	-	-	-	-	5 "

Warm the dextrin and water, add the acetic acid and heat. Stir in the glucose and finally add the alcohol and a little carbolic acid. Thin with water as required. The function of the glucose is to prevent the adhesive coating from cracking. If the coating is too tacky when dry, use less glucose.

### The Burnishing of Motion Picture Film, and

J. I. Crabtree

0649

### Other Methods of Prolonging the Life of the Same

Report No. 365

It is considered that developed positive motion picture film, even after cleaning, is not finished unless it has been treated in some way to prevent both the accumulation of particles of gelatine on the tension springs when the film is passed through the projector, and scratching of the film during reeling. So far, it appears that the best method of doing this is to treat the film either along the perforations, or over the entire surface with a suitable oil which acts as a lubricant to the film surface. As it is perhaps simpler to treat the whole width of film in this way, and as by so doing scratching of the film is prevented during rewinding, this method is to be recommended. Experiments were made on the cold burnishing of the edges of the film by using a highly polished rapidly rotating steel burnisher but these were unsuccessful.

## Patent Abstracts

### U. S. Patents

1232702

F. W. Lovejoy, Assigned to E. K. Co.

B1212

A Motion Picture Film, the base of which comprises in separate layers two substances which develop static electric charges of opposite sign when acted upon frictionally. The electric effects thus neutralize each other, and static marks on the emulsion are avoided.

1232077

E. Planchat H3

A Process for the Quick Drying of Films. The latter are drawn through a mercury bath of sufficient depth to squeeze out a large part of the moisture through hydrostatic pressure. The partly de-hydrated film is then dried in a heated chamber.

1232504

D. F. Comstock, Assigned to Technicolor  
Motion Picture Corporation.

K067 K/23

A System for Facilitating Registration of the Projected Positives in Multi-Color Motion Picture Work. The green pictures may have a small target printed in one corner and the red pictures a larger target in the corresponding corner. When the projected red and green pictures are properly superposed, these targets will appear concentric on the screen.

1233176

P. D. Brewster K345 K/43

An Apparatus for Printing Two-Color Motion Picture Film of the type in which the red and green images are on opposite sides of the film. An optical system projects the images from the negative film gate alternately upon opposite sides of the positive film gate, the negative film being advanced two image spaces, while the positive film is advanced one image space.

1233772

L. Gaumont, Assigned to E. K. Co. K363 K/23

A Lens for Three-Color Motion Picture Projection. It consists of three relatively adjustable objectives placed side by side. The adjusting mechanism of the outer objectives is relatively detachable to permit of their individual removal.

1234390

F. F. Renwick and B. V. Storr, Assigned to  
Ilford Limited. P1

A Process for the recovery of silver from dilute waste photographic emulsions. Alum is added and then ammonia, the flocculent precipitate thus formed carrying down the silver salts.

1234391

F. F. Renwick and B. V. Storr, Assigned to  
Ilford Limited. P1

A Process for the recovery of silver from diluted emulsions representing the waste in the manufacture of photographic sensitive material. A coagulant of gelatine such as ferric chloride is added and the precipitated gelatine carries the silver salts down with it.

1235871

C. M. Aument 0631

A Method of Making Animated Cartoon Motion Pictures. The pictures are drawn upon a ground glass plate and by sketching dotted lines on the rear side thereof; the artist can gauge the position of each succeeding picture on the front face of the plate.

1234046

P. J. Landin 0649

A Motion Picture Film in which titles are printed at the bottom of the picture area.

1233076 F. Lowenstein 065

A Card Index System for Motion Picture Films. The cards carry not only printed identification data but a series of specimen pictures from different parts of the film.

1236229 H. F. Stowell 067-32

Spectacles for Viewing Motion Pictures. They comprise opaque plates provided with narrow slits to cut off the marginal light rays and reduce flicker.

1234888 Wilma Eppers 072

A method of making a stipple grain screen by preparing a reticulated surface from bichromated gelatine, inking up and transferring an impression onto glass.

1235894 J. A. H. Hatt 072

A Photomechanical Screen having an air space between its two glasses. Also patents an inside rabbit filled with a sealing compound to prevent silver nitrate entering between the screen.

1235997 A. J. Mottlau, Assigned to G. E. M. Engineering Co. 083-219

An Automatic Roll Film Camera adapted for aeroplane use. The film is moved automatically across the exposure aperture and is exposed while stationary through the movement of a curtain shutter of the endless band type.

1236419 W. F. Folmer, Assigned to E. K. Co. 083-219

An Aviator's Camera. It is provided with a front hand grip arranged forwardly beneath the camera body, a rear pistol grip arranged rearwardly beneath the body, a neck strap comprising a loop having its ends attached centrally of the camera body and a trigger adjacent the pistol grip for operating the shutter. A focal plane shutter is employed which is capped by a flap shutter mounted in front of the lens and so connected with the trigger that it opens just prior to the release of the focal plane shutter.

1236272 E. E. Costley 086-219

A Device for photographically and simultaneously recording a person's height and weight. The person stands in front of the camera upon weight scales and in front of a height scale.

1237239 Isaac S. Bunnell 21

A Photographic Method and Apparatus for reproducing texts from fancy alphabets.

1233095 C. M. March 2101

A Stop Mechanism for preventing the closing of a folding camera when the rising and falling front is not properly centered, thus preventing injury to the bellows by improper folding.

1233929 L. K. Atrate 215

A Roll Film Camera provided with a quick winding mechanism driven by a spring motor and controlled from a measuring roll operated by the moving film.

1235320 H. L. Ide, Assigned  $\frac{1}{2}$  to Roy W. Ide 215

A Roll Film Camera in which the usual opening in the back, through which the numbers of the film are observed, is extended in the line of travel of the film so that the numbers may be observed before they reach the correct position. The object is to avoid overwinding without the use of warning marks on the film.

1236271 L. F. Corrodi 215

A Roll Film Camera provided with a winding indicator upon the shaft of the supply spool. A special arrangement permits the film to be wound backwards if it be accidentally wound too far forward.

1232828 R. H. Moore and R. P. Saffold 2152

A Roll Film Camera provided with an automatic film winding mechanism driven by a spring motor controlled from a steel tape which is wound simultaneously with the film. The shutter is so connected with the winding mechanism that a fresh section of film is automatically wound into position shortly after an exposure is completed.

1235073 C. Spiro 2152

A Roll Film Camera provided with an automatic winding device driven from a spring motor. When the operator pneumatically releases the shutter, the winding mechanism is released immediately afterward to draw a fresh section of film into position. The winding roll can be disconnected while the film is being wound to its first position and after the film is all exposed it may be rewound upon its original spool, thereby winding up the spring motor. Provision is made to compensate during winding for the increasing diameter of the film upon the winding roll.

1234770 E. G. Kesling 2153

A Print Titling Film Roll. The film is provided at each end with an attached lead strip of opaque paper. In rear of the film and separate therefrom is a backing strip of translucent paper, the ends of which are provided with adhesive. It is used in a special camera which enables the operator to write upon the backing paper without fogging the film and subsequently to light print the writing onto the film. In the final print the writing appears as a black line on a white field.

1235222 W. D. Marshall, Assigned to E. K. Co. 2153

A Roll Film Camera which enables titles to be written and then light printed upon the film. The film includes a backing paper that is translucent in a single layer, but opaque when there are several layers. The camera back is provided with a transverse window and chambers at either side. A web of carbon paper is wound from a reel in one chamber across the window to a reel in the opposite chamber. The operator writes on the carbon paper through the window and then light prints the writing onto the film through the backing paper.

1236007 A. A. Ruttan, Assigned to E. K. Co. 2153-214-213

An arrangement for Marking Titles on Plates or Film Packs. The slide in the plate holder or film pack adapter is provided with a translucent panel adapted to receive writing and the arrangement is such that the panel may be moved into the exposure opening of the holder to light print the writing upon the plate or film and

may then be moved into a suitable passageway in the holder. The bottom of the dark slide moves in an especially deep groove in the holder, which permits the movement of the panel without injuriously exposing the plate or film.

1232993 C. G. Tanquary and W. J. Caldwell 2155

A Panoramic Attachment for View Cameras. A spring motor rotates the camera and simultaneously winds the film past an exposure slit.

1235685 August C. Hansch 216

An Automatic Copying Camera of complicated construction evidently designed for screen negative making.

1236928 O. V. Greene 2171

A Photographic Copying Apparatus of the vertical type in which the parts are actuated by gravity. A cam arrangement focuses the camera automatically.

1234746 E. B. Fish, Assigned to The Cameragraph Co. 2172

A Spool Centering Device for use in commercial copying cameras of the type which employ a web of sensitive paper. The shaft upon which the supply spool is placed is provided with stepped portions of different sizes co-operating with the clamp.

1235282 O. A. Bradshaw 231

A Flash Light Apparatus which is ignited by sparks from a pyrophoric alloy abraded by carborundum.

1236683 C. DeMarco 241

A Printing Frame for roll film in which the film is wound from a supply roll in one compartment across the printing area to another compartment. A ribbon-shaped mask with different sized openings can also be wound back and forth between the compartments to bring the desired openings over the film in the printing aperture.

1234554 F. F. Metzger 247

A Blue-Printing Machine of the type in which an endless belt carries the paper and negative over a curved glass printing window.

1232900 B. M. Dickson 251

A Device for Loading Film Pack elements or cut films into the specially grooved container of a developing tank.

1234346 R. Kersten 252 256

An Apparatus for Washing or Developing Photographic Plates. The plates are loaded in frames which are secured in radial position upon the periphery of a rotating drum. The rotation of the drum drags the frames and plates through the liquid.

1232796 L. M. Hardenbrook 243

A Photographic Post Card bearing a colored border design, the design being treated so as to be uninjured during developing and fixing.

1234641

B. M. Dickson 2542

A Developing Tank designed for the treatment of film packs or cut films. Vertical grooves at the sides of the tank-rack are so turned that the loaded film will be held in an arched form, permitting the films to be placed close together and tending to avoid contact during expansion in the developer.

1236092

A. C. Killius 2543

A Developing Holder for Cut Film.

1234410

W. E. Stromberg, Assigned  $\frac{1}{2}$  to E. H. Schmicking 258

A Print-Drying Machine of the type in which the prints are carried by endless belts around a heated drum.

1233441

A. Benko 259

A Portable Collapsible Dark Chamber of the type having light-trapped sleeves at the sides through which the operator introduces his arms while looking into the chamber from an observation window in the front.

1236947

G. Landis 2614

A Camera Support. The camera is mounted at the forward end of a gun and its shutter is actuated from the trigger of the gun by a cable or pneumatically.

1233571

P. J. Hansen 2621

A Studio Camera Shutter having pivoted leaves which are interconnected to turn in opposite directions by a crossed belt.

1232768

L. P. Carhart 2623 2152

An Attachment for a Between-the-Lens Shutter which indicates the number of the film area that was exposed by the last operation of the shutter. The shutter is locked after each exposure to call the operator's attention to such number with the object of avoiding a double exposure.

1234061

P. J. Marks, Assigned to E. K. Co. 2623

A Photographic Shutter in which the pivoted leaves are driven from a motor spring. The retarding device which controls the motor, and therefore the duration of exposure, comprises a train of gears so connected with the motor through a switch device that they have a retarding movement in two directions, the retarding effect being the same whether the gears are turning forward or backward. The gears may be successively thrown into or out of mesh to alter the retarding action.

1235273

A. Wollensak, Assigned to Wollensak Optical Co. 2626

A Cable Release for Photographic Shutters, the front end of which is provided with a cup-shaped head which engages a pointed projection on the end of the releasing lever of the shutter.

1235100

J. L. Blickenstaff and J. H. Werking 264

An Automatic Masking Device for tilting finders. It comprises two masks at right angles mounted up on a common shaft and so arranged that the horizontal mask co-operates when the finder is turned for horizontal pictures and the vertical mask co-operates when the finder is turned for vertical pictures.

1236895 M. Zwillinger, Assigned to Crown Optical Co. 2634

A Photographic Lens in which the aberrations are corrected without using barium crown glass, common, dense, flint glass and common crown glass being used.

1236201 S. A. Mischansky, Assigned 40/100 to F. Busin 2652

A Photographic Plate Magazine. The forward plate in the magazine is slid into a special plate holder, which is then used in a camera like an ordinary plate holder. After exposure, the plate is returned to the magazine and a fresh plate slid into the holder, and so on.

1234339 H. L. Ide, Assigned  $\frac{1}{2}$  to Roy W. Ide 2671

A Depth of Focus Scale for Folding Cameras, there being a sliding cover containing two spaced openings beneath which the limits of field automatically appear during focusing.

1232589 J. R. Mettler and G. M. Laffoon 275

A Retouching Pencil or tool in which the point is rapidly vibrated electro magnetically.

1234136 H. M. Connor and D. D. Miles, Assigned to 312  
Albert H. Herbert, et al.

A Motion Picture Camera in which the supply reel and winding reel are located side by side in the rear of the camera, their axes being in alignment with the axis of the lens. Film can be wound backward or forward from one reel to the other merely by turning the winding crank forward or backward; thus facilitating the making of dissolving views.

1236639 W. E. Williams 319 325

A Motion Picture Film provided with two series of pictures arranged alternately. The perforations opposite the pictures of one series are of a different shape and differently spaced from the perforations adjacent the other series. The margins of one of the series are also differently shaded to minimize the possibility of a mistake in locating the film in the camera.

1232327 J. Keller 3203

An Intermittent Gearing for Motion Picture Machines to enable the shutter to act sixty-four times per second, while the film is moved only sixteen times per second.

1233186 L. W. Clark, Assigned to Photo Motion Co. 3203

A Motion Picture Shutter in which the usual opaque segments are replaced by semi-opaque fabrics or other foraminous light diffusing material.

1233816 C. R. Smith, Assigned  $\frac{1}{2}$  to F. R. Smith 3203

A Shutter for Motion Picture Machines carrying a pair of relatively movable shutter blades whereby the timing of the blades relative to the lens opening may be varied and a dissolving effect will be obtained.

1231945 E. A. Rupert 3204

A Fireproof Film Case, the double walls of which are filled with an absorbent material to moisten the air in the case and keep the film in a pliant condition.

1232753

L. S. Balura 3204

An Attachment for Motion Picture Reels to facilitate the joining of the film end to the hub. It includes a clamp for engaging the reel hub, a flexible strip and a clip carried by the free end of the strip.

1233868

M. A. Godwin 3204

An Indicator for informing the operator of a motion picture projector that the end of a reel is approaching. A pivoted arm carries a roller which bears upon the film in the reel. Its motion moves a pointer over a scale.

1234545 C. F. Jenkins, Assigned to The Graphoscope Co. 321 3204

A Motion Picture Film Container in which the winding and supply reels are located side by side upon a common axis but out of contact. The film passes from the supply reel over special guides out of the container through the projecting or exposing mechanism and then back into the container onto the winding reel.

1235776

F. L. Dyer 321 322

A Motion Picture Projecting Machine in which the film is intermittently moved with respect to the light beam and a system of reflectors is provided which co-act with the light beam to compensate for the movement of the film to hold the image stationary on the screen and keep it constantly illuminated to avoid flicker.

1234127 W. H. Bristol, Assigned to The Bristol Co. 323 069

A System for Electrically Operating Motion Picture Apparatus and a phonograph in synchronism.

1236319 J. Kleidman, Assigned to The Aheadofit Pictorial Co. 325

A Home Motion Picture Device provided with a special focusing mount.

1236819

F. J. Bulask, and F. E. Koella 327

A Motion Picture Projector of the type which employs a series of pictures arranged spirally upon a disk.

## British Patents

B106866

C. W. R. Campbell and F. G. A. Roberts 06

Pictures. Cinematographic or non-cinematographic pictures are presented to the view of a moving observer by means of a number of pictures on a back-ground and a slotted screen between the background and the observer. The background and screen may constitute hoardings parallel to a road or railway so that the virtual picture is visible to an observer traveling along the road, etc. Cinematographic effects may be obtained by varying the successive pictures or by modifying the slots. For example, the slots may be inclined, successive slots being at different inclinations so that identical pictures of a pendulum produce a virtual picture in which the pendulum appears to swing. Alternatively, the slots may be inclined for successive slots. The distance between the background and screen may be different at different places so as to cause the width of the virtual picture to vary. This may be effected by making the background sinuous or by arranging the screen in lengths, the ends of which are at different distances from the background.

B107025

B. C. Bullis 069

**Sound Recording and Reproducing.** A phonographic strip record, consisting of a deposit of variable thickness of iron or other magnetic metal, is produced by a photographic printing process from a negative of variable transparency. The negative is obtained by traversing a photographic film past a slot illuminated by an incandescent electric lamp, the circuit of which is connected inductively to a circuit containing one or more microphones, in such a way that an increase of current in the microphone circuit causes a diminution of the brightness of the lamp. The record is reproduced by traversing it between the poles of an electro magnet having its coils connected to a telephone receiver. The film is traversed past the slit by rotating the drums and the slit is illuminated by a single tungsten filament lamp and lens. The lamp circuit contains a battery and is coupled inductively to a second battery circuit including microphones. The master record thus produced shows, on development, alternate transparent and opaque transverse lines. This record is then placed in contact with a film strip having a bichromated gelatinous coating containing particles of iron or other magnetic metal in suspension. When the films are exposed to light, the gelatine hardens to a depth corresponding to the intensity of the light. After exposure, the film and its attached gelatine coating are mounted on a permanent backing strip, and the whole is immersed in a bath which removes the temporary film and the soft portions of the gelatine, thus leaving an undulating surface of magnetic material. This record may be reproduced by passing it between the poles of an electro-magnet having its coils connected through a relay device to a receiver. The varying thickness of metal in the record varies the reluctance of the magnetic circuit and causes corresponding variations of current in the telephone circuit. The sound record is preferably made simultaneously with a picture film arranged at the side of the sound film, and suitable identification marks are printed on each by a lamp and an overlapping strip carried on reels. The films are matched by the identification marks after development and printing.

B107167

W. B. Vansize 069

**Combined Moving-Pictures and Phonographic Apparatus.** In synchronously recording correlated light and sound variations, as in the joint production of moving-picture films and phonograph records, the sounds are transmitted to the recording apparatus by wireless telephony. Each performer carries transmitting apparatus. In reproducing the recorded sounds by the Poulsen telegraphophone method loud-speaking telephones are suspended from the ceiling in the auditorium. Amplifying valves are preferably employed, and three such valves may be connected in cascade in known manner.

B107213

J. P. Murray 2645

**Focusing-devices.** The object for which the camera is to be focused is viewed directly through a pivoted transparent reflector and by double-reflexion from the mirrors, the two images being brought into register by moving the objective in or out and so altering the angular position of the mirror, which is connected by the rods, to the part carrying the objective. The reflector may be of amber-colored glass. In a modification, the mirrors are carried on the front of a camera and the transparent mirror is fixed, the other mirror being angularly adjusted by the movements of the objective through a system of rods and links.

B106900

W. J. M. Jackson 07225

**Photographic Printing.** Relates to improvements in photographic printing apparatus of the kind described in Specification 23684/08 for printing upon sensitive surfaces on plates of metal or other material or on lithographic stones which are after-

wards finished for printing in one or more colors. The apparatus is fitted with adjusting means so as to adapt it (a) for repeating a number of like prints upon a single plate for printing simultaneously a number of impressions, (b) for arranging different subjects in a specified way for composing purposes, and (c) for multi-color printing where exact register is required upon the different plates.

B107156

W. G. Kidd 283

**Mounts.** The invention relates to mounts in which photographs are displayed. The object is to provide a mount the area of whose opening may be readily increased to suit the particular size of photograph. The mount is provided with a rectangular opening to admit a photograph. Parallel to each side of the opening incisions are made through the mount, the strips remaining attached to the mount owing to the incisions not meeting at the corners, thus leaving small portions uncut which provide sufficient material to connect the strips to the mount. When it is desired to remove one or more of the strips so as to enlarge the area of the opening, the blade of a pen-knife is inserted in the desired incisions and the incisions at the corners are completed so that the detached strips may be removed, thus increasing the size of the opening and permitting a larger photograph.

B106856

J. W. Vickers 3104

**Cinematograph Apparatus.** A light-tight casing for containing a cinematograph film and permitting loading or unloading of a camera in daylight is constructed of paper, card, sheet metal, opaque or colored celluloid, etc., and has a central tubular support for the film which is carried by the bottom of the casing and extends to or close to the top of the casing.

B107138

T. H. Blair 3203

**Cinematograph Shutters.** A cinematograph shutter comprises a disk having an opaque portion to cut off the light during the film movement, and a series of openings which are arranged in pairs with an opaque bar between them, and are separated by perforated sections or sections of semi-opaque material. The perforations in the sections are preferably arranged in radial rows and in staggered relation.

## German Patents

DRP298478-1915

J. Lewisohn K/42

**Productions of Prints in Natural Colors by Means of Three Printings.** The prints in the proper colors, from negatives taken through color screens, are superimposed. The usual technique is followed.

DRP293218-1915

W. R. B. Larsen 07332

**Screen for Photographic Work.** A portion of the lines of the screen is made with transparent parts, in order to secure a varying effect on the light sensitive plate in the high lights and half tones. Transparent or translucent color flakes are superposed upon the transparent parts, on the cover glass of the screen, so that when the two glasses are placed together the light openings are covered by the flakes.

DRP293193-1915

Rotophot-Akt.-Ges. für Graphische Ind. 07131

**Diapositives with Inverted Half-tone Picture and Text or Drawing.** By means of these diapositives, simultaneous etching of half-tone pictures and text may be accomplished.

# Monthly **ABSTRACT** Bulletin



November, 1917

**Issued by the Research Laboratory**  
**EASTMAN KODAK COMPANY**  
Rochester, New York

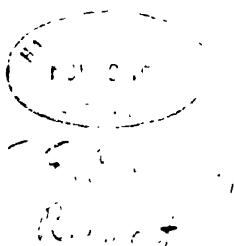


# Monthly Abstract Bulletin

Vol. 3, No. 9

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November, 1917



## Erratum

In the ABSTRACT BULLETIN for October, page 165, line 1,  
for *photographic* read *pantographic*.

## Photography

### Removing Developer Stain by Redevelopment H-041

Studio Light, Aug., 1917, p. 22

An article compiled from data furnished by the Research Laboratory.

### Stains on Negatives and Prints H-041

Photo Era, Aug., 1917, p. 66

An article prepared by the Publicity department of the E. K. Co. from data supplied from the Research Laboratory. Oxidation stains, ink stains, drying marks, etc., are removed by first hardening the negative in formalin, washing, bleaching in a permanganate-chloride bath, removing the manganese stain with sodium bisulfite, and redeveloping in daylight with a non-staining developer. Silver stains may be removed by means of a weak solution of potassium cyanide or by copying the negative on a panchromatic plate through a yellow filter.

### The Technicolor System of Color Photography A. S. Cory K28

Mot. Pict. News, Oct., 1917, p. 2606

An article describing the technicolor process of Kalmus, Comstock and Westcott, including a criticism of a seven reel drama in color recently exhibited in the Aeolian Hall, New York City. The process appears to be a two color additive process; the negative is taken through one lens placed before a compound prism fitted with a grid mirror which splits the beam of light. With such a beam splitting prism the exposure required under given conditions is approximately twice that required when using two lenses; it is stated that this has been compensated for by the use of hypersensitized film. With such an arrangement, however, stereoparallax is eliminated so that close-ups free from color fringing may be taken.

Commenting on the screen results the author states that he experienced no eye fatigue even after a three hours run. The rendering of flesh tints was good, though with the filters used the whites were yellowish.

### Decennia Practica—Color Photography K38

B. J., Col. Supp., 1917, p. 35

This deals with compensating filters and safelights for the Autochrome process and with M. Gravier's three-solution process for treating the Autochrome plates.

### A Use for Old Bromide Paper S. W. Webster J1

Photo Era, Oct., 1917, p. 175

The writer states that old bromide and gaslight papers can be used for rough proofs by fuming with ammonia and using as print-out papers.

### The Effect of Moisture J3-014

Studio Light, Aug., 1917, p. 14

Attention is drawn to the fact that the latent image on exposed prints will fade, even in the course of a few hours if the prints are allowed to stand in a moist atmosphere before development. The action of red light appears to accelerate the rate of fading. It is important therefore to develop prints as soon as possible after exposure, but if it is necessary to store before development, the prints should be kept in a tin box containing a desiccating agent such as calcium chloride.

## Double Fixation of Prints

J4

B. J., 1917, p. 459

The editor urges that the use of a double fixing bath originally recommended by A. and L. Lumière should be followed.

## Developing Stale Bromide Paper

J4

Photo Era, Oct., 1917, p. 199

Advises the use of potassium bromide and potassium cyanide as a restrainer. This is said to give bright prints on old paper.

✓ The Production of Sepia Tones by  
Direct Development

A. H. Nietz and K. Huse

J83

Phot. J. Amer., 1917, p. 405

B. J., 1917, p. 497

It is well known that slow developing-out photographic papers will give warm tones if overexposed and developed with a strongly restrained developer. Observations recorded in this paper were made in order to find the best conditions for producing sepia tones by this method.

The process is attended by uncertainties and is not by any means easy, but with great care in manipulation excellent sepia prints can be obtained with some subjects. The tone depends only upon the time of development, and with this time fixed good reproduction of tone can be secured, the exposure then being adjusted to get the necessary depth of print. For obtaining good sepia tones corresponding to the sepia water-color manufactured by Winsor & Newton, and free from the objectionable smokiness in the shadows, this process is particularly suitable. Since in development the print starts as a red-brown and passes through brown, sepia-olive, sepia, and olive, any of these tones can be obtained under given conditions.

Artura chloride is the only paper with which the writers could obtain satisfactory results, and it is to be understood that all subsequent statements imply the use of this material.

The most satisfactory developing agent was found to be chlorhydroquinone. Elon, hydroquinone, and other substituted hydroquinones were investigated, but chlorhydroquinone has the necessary properties for use as a restrained developer—proper sensitiveness to restraining agents, freedom from fog and staining, and stability. The best working formula was found to be

Chlorhydroquinone	-	-	-	-	-	-	5 gm.
Sodium sulfite	-	-	-	-	-	-	30 gm.
Sodium carbonate	-	-	-	-	-	-	16 gm.
Potassium bromide	-	-	-	-	-	-	6 gm.
Potassium metabisulfite	-	-	-	-	-	-	6 gm.
Water	-	-	-	-	-	-	to 1000 cc.

With this as a basis, a systematic series of experiments on the effect of each constituent was carried out. The principal fact brought out was the necessity of securing a proper balance between the concentration of potassium bromide and that of the potassium metabisulfite.

That the tone is dependent only on the time of development was indicated by the manner in which the print changed continuously in color while in the developer, as already stated. Any of the colors can be obtained by stopping development at the proper time. As the prints change color in the fixing bath and again on drying, judgment of tone should be based entirely on the appearance of the finished print. By developing test-strips for different known lengths of time, the correct time of development for any desired tone is determined.

The exposure being excessive (about 75 to 100 times normal), the use of nitrogen-filled tungsten lamps or other powerful light sources is recommended. When correctly exposed, the image is slightly printed out.

Since the process tends to shorten the scale of the paper by increasing the contrast, the range of negatives suitable is more limited than for ordinary reproduction. With soft portrait negatives of a certain type, good prints may be obtained using such tones as olive-sepia or decided olive, but another class of work for which this process is perhaps best adapted is the reproduction of paintings and etchings. A rich etching-sepia is readily secured in the latter case.

The image is not due to any oxidation product, but consists of silver, and the color depends on the state of division. For this reason prints made by this method are permanent.

Specific directions for working the process are given in the full paper.

### Hydrochinon Toning

J84

Camera, Oct., 1917, p. 537

Mentions the characteristic tone given by old hydrochinon developers, and gives the following formula for toning bromide prints to a reddish tone: 200 parts water, 5 parts potassium bromide, 1 part quinone. Subsequent treatment with alkaline sulfides is said to produce all possible brown tones.

### System in Retouching for the Trade

L1-031

B. J., 1917, p. 472

This concerns the establishment of a system by which the trade retoucher may fix a price for his services to avoid disputes with customers and at the same time may obtain uniformity over a batch of work whatever the grade of work may be. There are other suggestions regarding the business handling of the work.

### A Copying Press for Dry Mounting

A. Buchanan

N1-285

B. J., 1917, p. 455

Account illustrated with photograph of method of using a copying press for dry mounting prints.

### Photographic Resolving Power

A. S. Cory

014 ✓

Mot. Pict. News, Sept., 1917, pp. 2055, 2231, Oct., 1917, p. 2411

A resumé of the work of Scheffer, Goldberg, Nutting, Mees, and others on the subject.

### Tone Rendering and Quality in Gaslight Papers

T. D. Tennant

015

Photo Era, Oct., 1917, p. 172

### The Photographic Rendering of Tone Values, IV.

C.E.K. Mees

015

Studio Light, Aug., 1917, p. 6

In this article the properties of printing papers are discussed. By an application of the Hurter and Driffield system to paper, measuring density in terms of the amount of light reflected, the various properties of a printing paper such as the maximum black, contrast, scale, and quality can be stated in definite figures. The "scale" of a paper is defined as the range of exposures which will reproduce all the tones of the paper, while "quality" is measured by the length of the straight line portion of the H. & D. curve. Just as the Seed 30 plate stands out amongst negative making materials by reason of the length of the straight line portion of the curve, so Artura Iris paper is distinguished by its straight curve, marking an even range of tones throughout its entire scale.

## Some Points in Copying, I. and II.

057

B. J., 1917, pp. 447 and 459

Suggestions for a professional photographer who wishes to take up copying work. The second part gives suggestions for the use of color sensitive plates with filters and for the calculation of exposure.

## Some Points in Copying, III.

057

B. J., 1917, p. 470

This deals especially with the treatment required by different kinds of prints when they are copied and also with the use of contrast filters to remove stains.

## Trick Work and Double Exposure

C. L. Gregory 0631

Mov. Pict. World, Sept., 1917, pp. 1854, 2002, Oct., 1917, pp. 90, 238

A series of articles describing in detail the various trick methods employed by the modern camera man. The fade-in, fade-out effect formerly seen in almost every picture may be obtained in four ways; (A), by closing the iris while cranking; (B), by means of a dissolving shutter; (C), by the use of a graded screen or wedge before the lens; or (D), chemically. The dissolving shutter gives the best results, since on closing the diaphragm the effect on the increased depth is invariably noticeable. The effect can be produced chemically by graded reduction, using a solution of iodine in potassium cyanide or Farmer's reducer. The roll of negative film should be wrapped in rubber cloth leaving the portion to be treated protruding and the solution swabbed on with absorbent cotton. A short stop of bisulfite should be at hand in which the treated portion is immersed as soon as reduction is complete. If a "fade-in to the other" effect is required, it is necessary to over-lap the "fade-out" and "fade-in" portions, make a duplicate negative, and splice this into the film. The circle-in, circle-out effect has now largely replaced the fade-in, fade-out effect. This is produced by means of a diaphragm fitted into a tube and working before the lens, the degree of sharpness of the shading being adjusted by varying the distance of the diaphragm from the lens. The method of masking and synchronizing for producing vision and split-stage pictures is also described in detail. This is accomplished by using inside and outside mattes or masks. In case the mask can not be supported at the side, as in the case of producing the effect of a girl's head inside a flower, a glass matte is employed.

## Concentrated Hydrochinon Developer

H. Green 163

B. J., 1917, p. 476

Formula for making up such a developer with the aid of spirit.

## Monomet Developers

163

B. J., 1917, p. 478

Further letters from various writers with regard to Monomet formulæ.

## Empty Spools Wanted

2653

In the September number of the Kodak Trade Circular, London, a request is made for the return of empty spools (Vest Pocket and Brownies Nos. 1 and 2) for which a price of six cents per dozen in addition to carriage will be paid.

- Exposure Meters With Subject Scale** P. Tripp 2683  
B. J., 1917, p. 490

A description of a method of modifying a Bee meter so that it carries a subject scale.

- The Album Question** 2835  
B. J., 1917, p. 470

An editorial note referring to this subject and mentioning the new album recently introduced by the Company.

- An Efficient Shutter Dissolve for Pathé Cameras** 3203  
Mot. Pict. News, Oct., 1917, p. 2413

A description of the construction and mode of operation of a new shutter dissolve as supplied by G. Gennert & Co., New York City.

- British-made Metol**  
B. J., 1917, p. 452

Johnson and Sons have placed on the British market a British made Metol that is the sulfate of mono-methyl-paraminophenol.

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## Photo-Engraving

- Photographer Learns from Printers** 0311  
Amer. Printer, Oct., 1917, p. 58

A letter stating that photographers do not keep track of costs and that one at least is indebted to the organized master printers for their cost finding methods.

- Place of Photo-Engraving in Advertising** L. Flader 07  
Amer. Printer, Oct., 1917, p. 35

Shows the very large use of engraving in advertising, by counting the illustrated advertisements in some of the big magazines, from 59 to 98 per cent use engravings.

- Sidereographic Engraving** 0714  
Inland Printer, Sept., 1917, p. 801

This is engraving in intaglio in soft metal afterwards hardened and transferred to soft steel roller which is in turn hardened and rolled into soft steel plate from which the engravings (such as postage stamps) are printed.

- Copper for Half-tones in New Form** 07334  
Inland Printer, Sept., 1917, p. 802

Description of method of electrolytically depositing thin sheets of copper which are backed up by type metal and used for engraving in order to save cost of usual 16 gauge copper used.

## Physics

- The Determination of Coma from a Central Ray T. Smith  
Proc. Phys. Soc., 1917, p. 293

This paper is likely to be of value to optical computers as the results established form one of a series of reciprocal relations which exist between aberrations of an object and those of the effective stop.

- Chromatic Parallax and its Influence on Optical Measurements J. Guild  
Proc. Phys. Soc., 1917, p. 311

When an object illuminated by colored lights is viewed through an aperture smaller than the pupil of the eye various parallax effects are observed due to the chromatic aberration of the eye. When observations are made in the blue and violet the necessary conditions for such parallax are present in most optical instruments of precision. This results in a serious diminution of accuracy and the writer describes several methods of overcoming the difficulty.

- The Mechanism of Color Vision J. Guild  
Proc. Phys. Soc., 1917, p. 354

A well-founded criticism of Dr. R. A. Houstoun's theory of color vision.

- The Use of Monochromatic Interference Rings for the S. D. Chalmers  
Measurement of Curvature  
Proc. Phys. Soc., 1917, p. 362

A sodium flame or mercury lamp is used to produce the light, a fairly good measuring microscope is used, and an accuracy of 1 in 1000 is claimed in some cases.

- A New Chronoscope and Fall Apparatus P. E. Klopsteg  
J. Exper. Psychology, 1917, p. 253

A simple form of chronoscope suited to the measurement of intervals up to a half second, though adaptable to greater or shorter ranges. A constant current can be sent through a galvanometer fitted with a direct reading time scale. The fall apparatus is used to adjust and control the scale readings.

- Elimination of Pole-Effect C. E. St. John and H. D. Babcock  
Astrophys. J., Sept., 1917, p. 138

An important paper on the pole-effect. It is shown that the international arc is not free from the pole-effect error, in consequence of which some groups of the international standards are erroneous to an appreciable extent. It is found that the Pfund arc operated under certain conditions is free from this error. When pole-effect is eliminated the spectral lines are found to be much sharper.

- Penetrating Power of the X Radiation from a E. Rutherford  
Coolidge Tube  
Phil. Mag., Sept., 1917, p. 153

The author gives an account of some experiments made to determine the maximum penetrating power of the X-rays excited by high voltages in a Coolidge tube, using

principally lead as the absorbing material; he finds an interesting relation between the exciting voltage and the thickness of lead through which the radiation was measurable; the probable wave-lengths of the penetrating gamma rays from radioactive substances are discussed.

### Radiation and the Electron

R. A. Millikan ✓

J. Frank. Inst., Sept., 1917, p. 337

This paper reviews the various radiation theories giving the evidence for and against each. The author shows that although the Einstein equation appears to hold in all cases, the theory which led to the formulation of that equation is no longer tenable. He further discusses various theories that have been advanced but concludes that none of these at present have sufficient evidence in their favor to warrant their adoption.

### Characteristics of Small Dry Cells

C. F. Burgess

Electrician, 1917, p. 786

Standard tests of dry cells are outlined and the performance of various kinds of cells is given.

### Insulating Lacquers

M. Bottler

Electrician, 1917, p. 822

The requirements of a good insulating lacquer are given and the relative values of various kinds. Methods for making good lacquers are indicated.

### The Lubrication of Resistance Box Plugs

J. J. Manley

Electrician, 1917, p. 862

Plug resistance remains most constant when the plugs are smeared with vaseline.

### An Apparatus for Separating Visible from Invisible Light

W.S. Andrews

Gen. Elect. Rev., 1917, p. 817

Light from the source is condensed by a quartz lens and a pinhole diaphragm is placed at the mean focus of the ultra-violet light.

### A Temperature Scale Adopted by the General Electric Company and the Radiating Properties of Tungsten with Reference to this Scale

E. P. Hyde

Gen. Elect. Rev., 1917, p. 819

The scale is based on the best determination of radiation constants, melting points, and the emissive power of tungsten. A table gives the brightness temperatures, color temperatures, and lumens per watt corresponding to true temperatures of tungsten filaments.

## Analytical Chemistry

- Use of the Platinized Glass Anode in F. A. Gooch and M. Kobayashi  
Electrolytic Determination of Manganese  
J. Soc. Chem. Ind., 1917, p. 945

The anode is a lead glass tube with a thin coating of platinum burnt into the glass. This coating is obtained by painting upon the glass a viscous emulsion of glycerin and dry chloroplatinic acid then volatilizing off the glycerin (oil of lavender is usually employed instead of glycerin). With this rotating anode the manganese was successfully deposited from the electrolyte containing acetic acid and manganese sulphate.

- The Analysis of Coal, and a New Scheme for the H. Gröppel  
Examination of Coal  
J. Chem. Soc., 1917, ii, p. 384

Moisture, coke and ash are estimated with the same weighed sample of coal in the same apparatus consisting of a "duck"-shaped hand glass tube.

- Alpha-Benzildioxime (Reagent for H. Grossmann and J. Mannheim  
Nickel)  
J. Chem. Soc., 1917, ii, p. 391

This reagent is employed for the separation of nickel from zinc, magnesium, manganese and copper. The nickel precipitate may be heated to 180° C. without decomposition.

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## Organic Chemistry

- New Plastic Material 126  
J. Ind. Eng. Chem., 1917, p. 983

Gelatine or glue solutions are treated with oxalic acid and a decoction of hops; this clears the gelatine and renders it softer when dried. Dried sheets of this material are then hardened in a bath containing formaldehyde, alcohol, oxalic acid, tannin, and glycerin. The product resembles celluloid, but it is odorless and non-inflammable.

- Determination of Wood Gum in Cotton M. Freiburger 1411  
J. Soc. Chem. Ind., 1917, p. 923

A method based on the solubility of this impurity in 5% caustic soda solution, from which it is isolated by fractional precipitation with alcohol.

- Dyestuffs Containing the Pyridine Ring W. Harrison 1581  
J. Soc. Chem. Ind., 1917, p. 959

In addition to certain pyridine dyes, quinoline derivatives of the isocyanine series, such as Ethyl Red, Orthochrome T, Pinaverdol, and Pinacyanol, are discussed with regard to their constitution and photographic sensitizing action.

**Estimation of Nitrogen in Nitro Compounds**

A. P. Sachs

J. Soc. Chem. Ind., 1917, p. 915

The nitro compound is heated with a standard solution of stannous chloride in dilute hydrochloric acid, and the excess of reducing agent estimated by titration with iodine. The method is accurate to 0.05% on samples of nitrobenzene and picric acid.

**Spectroscopic Identification of Phenols**

J. Formanek and J. Knop

J. Soc. Chem. Ind., 1917, p. 922

About 0.1 gram of the phenol is converted to the phthalein by heating with phthalic anhydride and zinc chloride, and the absorption spectrum of aqueous and alcoholic solutions of the dye is observed.

**Process for Converting Cellulose into Glucose**

R. A. Kocher

J. Soc. Chem. Ind., 1917, p. 973

A patent (B-107219) on the process, worked out by Willstätter some four years ago, of hydrolyzing cellulose in such materials as sawdust with forty per cent hydrochloric acid. A quantitative yield of glucose is thus obtainable.

Adolf von Baeyer, professor of organic chemistry at Munich, died in August. To his researches more than those of any other German may be ascribed the foundation of the German dye industry.

Eduard Buchner, of Würzburg, distinguished for his researches on the chemistry of fermentation, died recently of wounds received at the front.

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## From Eastman Kodak Research Laboratory

**A Method of Waterproofing Paper Prints**

J. I. Crabtree L6

Report 307

A method has been worked out for rendering prints waterproof so as to withstand rain and damp weather by the use of Kodalac W.P. which is soon to be placed on the market. The lacquer is brushed over the surface of the prints, or these may be dipped, drained and hung up to dry.

**A Method of Preventing the Curling of Paper Prints**

J.I. Crabtree L6

Report 391

A method of preventing prints from curling up when dry, simpler than that of applying a sheet of backing paper, is to coat the back of the print with Kodalac W.P. The lacquer should be applied to the back of the dry print with a brush, and the print allowed to dry in a warm atmosphere, away from a flame, since the lacquer and the solvent are inflammable. If necessary, the lacquer may be thinned to the desired consistency with the Kodalac Thinner.

The Reduction of Contrast and Increase of  
Scale of Photographic Papers

R. B. Wilsey 016-J3

Report 401

Measurements on several papers confirmed the result obtained by J. Sterry that immersion in dilute potassium bichromate solution after printing and before development gives a large reduction of contrast and increase of scale, with very little loss of maximum black. There is no loss of quality or speed. Sodium sulfite used in the same way is less advantageous.

A White Deposit on N. C. Film

J. I. Crabtree 041

Report 412

A sample of exposed and developed N. C. film, as submitted by an amateur, had the appearance of a negative made on white or opal celluloid. On scraping away a portion of the image and of the gelatine backing, it was observed that the milkiness existed equally in the gelatine layers on both sides of the film, while the support was perfectly clear. It was considered that the milkiness was due to a colloidal precipitate of sulfur within the gelatine and this opinion was confirmed when a similar effect was obtained by precipitating sulfur in a film of gelatine by alternately placing the same in a solution of hypo and then in a 5% solution of hydrochloric acid. The milkiness in question was probably caused by bathing in an alum solution either before or after fixing, or the film may have been left in the fixing bath while the same was depositing sulphur.

Minimum Radiation Visually Perceptible

P. Reeves

Astrophys. J., Sept., 1917, p. 167

Communication No. 51

The previous investigations of this subject have in most cases used stellar light sources and have been uncertain about the area of the pupil. The writer used a direct laboratory method in which all physical stimuli were under accurate control and easily measured and obtained the diameter of the observers' pupils from instantaneous flashlight photographs. The conditions of stellar observations were approximated by viewing a 1 mm. aperture from a distance of 3 meters. The average of observations over a wide range of time shows the least perceptible radiation to be  $17.1 \times 10^{-10}$  ergs per sec. Observations were also taken by two other subjects and averaged with the writer's results for the same days, the average of the three observers giving  $19.5 \times 10^{-10}$  ergs per sec.

The Effect of Various Physical Stimuli on the Pupillary  
Area and Retinal Sensibility.

P. Reeves

J. of Ophthalmology, Otology and Laryngology, Sept. 1917

B. J., 1917, p. 415.

Communication No. 52

On account of the close analogy between the Kodak and the eye, an extensive series of investigations is being carried on in physiological optics in this laboratory and this paper contains a brief summary of some of the results obtained so far. The eye and the photographic plate are the most widely used instruments for studying light problems and in practically all cases the final judgments are rendered by the

eye. The eye operates through a range of ten billion to one and maintains a remarkable efficiency throughout a greater part of this extensive range.

When a spot 3 cm. square was viewed from a distance of 35cm. an eye adapted to darkness could just perceive a brightness of  $44 \times 10^{-7}$  millilamberts while if the eye was adapted to the brightness of the average bright sunny day the least it could see was about two ml. In the former case the eye could just tolerate a brightness of 2 ml. and in the latter case the limit was 16,000 ml. Throughout the range of ordinary vision the eye is able to detect a difference of  $1\frac{3}{4}$  per cent in brightness between two adjacent fields.

The adaptation of the retina was determined for changes from one brightness to another and with several colors of light. The change in the pupillary diameter was also studied for the entire range of illumination and the average pupil varies from a minimum diameter of 2 mm. to a maximum of 8 mm. The effect of exposing one or both eyes to the given brightness was tried and the pupil was found to be larger when one eye was closed.

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## Patent Abstracts

### U. S. Patents

1237342

J. D. Johnsen K0733

A Method for Producing Color Plates by photo-engraving in which the colors are first selectively hand-drawn as in ordinary chromolithography. Similar methods have been used for many years.

1238775

F. E. Ives K2116

An Optical System for Color Photography in which the customary platinized or silvered light-splitting mirror is replaced by a mirror surfaced with a layer of dichroic dye such as eosin. The dye surface is color selective with regard to its reflecting and transmitting ability.

1234450

T. A. Edison 1512

Dyeing Celluloid. Celluloid sound record blanks are treated with a solution of an aniline dye in 25% aqueous acetone and then washed with water and dried. Acetone of this strength does not dissolve out the camphor.

1234720

E. L. Bloch-Pimentel 1514

Compounds of Cellulose with Trioxymethylene. Cellulose in the form of artificial silk, films, or moulded articles, is treated with trioxymethylene and a condensing agent whereby its resistance to water is increased without causing change in shape or appearance. The product yields formic acid on hydrolysis.

1240027

John I. Crabtree, Assigned to E. K. Co. 1592

A Flash Powder which gives an illumination similar to that from Nitrogen Tungsten electric lamps and is therefore useful in color photography adapted to such light.

1239469 P. Dietz, Assigned to Defiance Mfg. Co. 2102

A Focusing Device for Cameras. It includes a plate movable transversely of the camera bed by means of an adjusting screw. This plate carries lugs which engage in oblique slots cut in the main focusing plate, whereby lateral movement of the adjusting plate causes longitudinal movement of the focusing plate.

1239017 R. Kroedel, Assigned to E. K. Co. 2105-215

A Roll Film Camera provided with a detachable back, the camera body and back having cooperating flanges and grooves to render the joints light-tight. A resilient flange at one end of the back is grooved so as to serve not only as a light trap, but as a latch.

1237333 H. H. Heckman, Assigned  $\frac{1}{2}$  to R. C. Rowen 2152

A Roll Film Camera provided with a quick wind mechanism driven from a spring motor. The shutter and winding mechanism are connected to prevent double exposure.

1238504 H. J. Gaisman, Assigned to E. K. Co. 2153

A Method of and Means for Producing Designations on Photographically Sensitive Elements. The specific illustration given in the drawing includes a sensitized film and a translucent paper backing bearing an opaque carbon coating, which may be displaced by a stylus to render it locally light permeable.

1238505 H. J. Gaisman, Assigned to E. K. Co. 2153

A Photographic Apparatus illustrated in the form of a roll film camera having an opening in the back through which the operator may write on the rear face of suitably prepared film. The opening in the camera back is provided with a hinged opaque cover and the interior of the camera opposite the opening is provided with a ledge for supporting the section of film on which the writing is done.

1238506 H. J. Gaisman, Assigned to E. K. Co. 2153

Method of and Device for Designating Photographic Exposures. The apparatus illustrated includes a roll film camera having an opening in the back through which the operator can write upon a strip of carbon transfer paper held in the rear of the backing paper of the film. This backing paper is translucent in single layers, but opaque in multiple layers. The carbon paper is carried in a suitable receptacle in the camera back and may be locally withdrawn to allow the transferred inscription to be light-printed through the translucent backing paper onto the film.

1238674 Z. E. House, Assigned  $\frac{1}{2}$  to Ira C. Curtis 2153

A Camera provided with means for light-printing inscriptions onto the borders of the pictures. The writing is done on a translucent strip, which is then inserted through a light-trapped opening in the side of the camera in front of the sensitive film. The carrier of the translucent writing slip is held in place by special strips.

1237701 J. A. Robertson, Assigned to E. K. Co. 242

A Printing Frame in which one of the hinged members of the presser back or platen carries a pair of perforated ears engaging over centering lugs on the frame. This arrangement prevents slipping when inspecting the progress of printing-out.

1239438 C. R. Grey 251

A Developing Tray having integrally formed at the ends thereof two fluid receptacles connected with the main part of the tray through valved openings.

1237657 R. Kroedel, Assigned to E. K. Co. 2541

A Tank for Developing Roll Film. The film is drawn through two parallel, looped guides. The guides are formed of a pair of flanged plates nested inside each other and spaced to admit developing fluid between them.

1237562 A. M. Schoenberg 2543

A Holder for Cut Film during development, comprising a rectangular frame having film gripping clips adjacent each corner. The clips are carried by spring arms which stretch the film flat during immersion.

1237563 A. M. Schoenberg 2543

A Device for Loading Cut Film into the holders shown in patent No. 1,237,562. The loading device not only serves as a guide for the cut film, but automatically opens the clips of the holder and manipulates the spring arms which carry the clips.

1237428 W. H. Watrous 2614

A Foldable Bracket adapted for attachment to poles, trees, door frames, etc., for supporting cameras. Two of its legs are spring pressed against the sides of the tree, while the third leg bears downwardly against the front face thereof.

1238422 P. J. Marks, Assigned to E. K. Co. 2623

A Photographic Shutter which is illustrated in connection with a three-color camera. The shutter blades are actuated to open position through the medium of a spring and then driven positively to the closed position.

1238471 A. Wollensak, Assigned to Wollensak Optical Co. 2623

A Photographic Shutter provided with a pneumatic retarding means. This includes two dash pots having their movable members counter-balancing each other and arranged to move in paths directed at acute angles to each other. This insures the same retarding action for any position of the shutter.

1239025 P. J. Marks, Assigned to E. K. Co. 2623

A Between-the-Lens Shutter of the setting type, the speeds being controlled by a gear train, the retarding action of which is varied through a variably moved sector. The movement of the latter is altered through a shifting fulcrum.

1240073 P. J. Marks, Assigned to E. K. Co. 2623

A Photographic Shutter provided with a convenient gear for controlling the leaves of the diaphragm.

1238621 H. C. Atwood 2626

A Clock-Work Mechanism for actuating a camera shutter after a time interval to allow the operator to include himself in the picture.

1238473 J. E. Woodbury, Exclusive License to E. K. Co. 2645

A Combined Finding and Focusing Mechanism for Cameras in which a range finder is coordinated with the moving lens carriage. This finder is of the moving mirror type and is connected to the lens carriage through a cam and two links. The finder is of the direct vision type and is arranged to fold compactly on the camera top.

1238474 J. E. Woodbury, Exclusive License to E. K. Co. 2645

A Focusing Device for Cameras in which a range finder is coordinated with the moving lens carriage. The range finder is of the type in which the images of two adjacent parts of an object are brought into alignment, the light rays being deviated in the range finder by refraction instead of by a moving mirror.

1236498 R. P. Stineman and O. O. Taylor 3101

An Intermittent Movement for Motion Picture Apparatus designed to impart a very swift movement to the film during the periods when the latter is moved.

1237046 A. S. Howell, Assigned to Bell & Howell Co. 3101

A Brake Mechanism for Motion Picture Apparatus designed to avoid strain when the machinery is suddenly stopped. Another purpose is to stop the mechanism in a predetermined position relative to the film.

1238520 A. S. Howell, Assigned to Bell & Howell Co. 3101

A Device for Feeding Motion Picture Film. It includes an oscillating shuttle carrying spaced pairs of teeth for insertion in the perforations in the film. After the teeth enter the perforations preparatory to making a feeding stroke, the upper and lower members of each pair are separated, thereby grasping the film firmly and securing a registry of the perforations during printing.

1238694 G. R. Macomber 3208

A Device for Handling Motion Picture Film so that it may be repeatedly and continuously displayed without rewinding. A rotating fork alternately forms a roll of doubled film in the rear of the apparatus and then automatically releases it.

1239504 W. E. Millar 3208

A Reel for Motion Picture Machines in which the film is fed from the inner convolution of the coil so as to avoid rewinding.

1239800

A. Luciano 323

A Combined Talking and Motion Picture Projecting Machine of the cabinet type for home use.

1237047

A. S. Howell, Assigned to Bell &amp; Howell Co. 387

A Device for Cleaning Motion Picture Film, particularly after the latter leaves the perforating machine. It includes a pair of rotary brushes and a vacuum device for drawing away the separated particles.

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## British Patents

B107795

T. Terashima 068-326

Cinematographic Apparatus. A cinematographic stereoscope for viewing the horizontally-moving film described in Specification 107797 comprises a lamp, reflector, and condensers for illuminating the film as it passes through the gates. The two condensers are at the inter-ocular distance apart, and one of them is nearer to the front of the stereoscope than the other, corresponding respectively with the positions of the members of the stereoscopic pair of pictures, namely one in an upper and the other in the lower row. The pictures are projected on a glass diffusing screen by means of objectives set so that the pictures will be formed at the same level. The eye-pieces, which may be adjusted by a pinion and the focus of which may be altered, may be set in a straight line with or at an angle to the objectives. In the latter case a mirror is employed. An ordinary cinematographic feed is fitted.

B107796

T. Terashima 068-326

Stereoscopic Cameras; Cinematographs. A stereoscopic camera has one objective placed higher than the other and the vertical projections are disposed at the inter-ocular distance apart so that the members of the stereoscopic pairs of images will be formed respectively in an upper and lower row on a single horizontal film, the positive of which may be viewed in the stereoscope described in Specification 107795. The camera is fitted with an ordinary cinematographic feed mechanism, a rotary shutter, and focusing-mirrors which are moved to or from the operative position by a handle.

B107797

T. Terashima 068-326

Stereoscopes; Cinematographs. Relates to stereoscopic picture films for stereoscopes, cinematographs, etc., in which the stereoscopic pair members are arranged one in an upper and one in a lower row and spaced longitudinally at about the inter-ocular distance, and consists in arranging about seven pairs within the said distance on a film of about half the normal width. Such a film may be used with the stereoscope described in Specification 107795.

B108193

E. Blendel la Rougery 127-C137

Sensitive Silver Mixtures. The invention comprises a process of making a sensitive layer intended for taking negatives, consisting in sensitizing gelatine by a mixture of a solution of 55 gms. silver nitrate in 250 ccs. distilled water, to which is added the quantity of ammonia required to dissolve the precipitate, and of a solution of 10 gms. potassium bromide, 30 gms. ammonium bromide, 0.50 gm. cadmium bromide and 0.50 gm. potassium iodide in 250 ccs. distilled water. The invention also com-

prises a process of producing a translucent paper base for the sensitized layer. If it is desired to obtain very fine and detailed positives, an extremely translucent paper without grain is selected, while if it is desired to obtain positives without too much fineness, producing certain artistic effects, a comparatively opaque and grained paper is selected.

For instance, in order to obtain a translucent paper without visible grain, pure rag paper is taken and chemically deprived of any impurities, then calendered three times under a heavy pressure, then raised to a temperature of about 80°C., and subsequently calendered at a lower pressure while at a temperature of about 18°C. This paper is coated with a layer of sensitized gelatine, an emulsion of the following composition being used:—55 gms. of silver nitrate are dissolved in 250 gms. of distilled water, adding the necessary quantity of ammonia to dissolve the precipitate, 10 gms. of bromide of potassium, 30 gms. of ammonium bromide, one-half gm. of iodide of cadmium and 0.50 gm. of iodide of potassium are dissolved in 250 ccs. of distilled water. Afterwards sensitized gelatine is prepared with these solutions by one of the ordinary methods. The sensitized paper is used either cut into sheets, in the manner of a plate, or still better, cut into bands like a roll of film. The paper is exposed in a camera in the same way as would be done in the case of plates or films. The negatives on paper are then developed and fixed.

The negatives thus obtained are then utilized for printing positives in the ordinary manner, and if the paper of the negative is very translucent and without a visible grain, positives are obtained which are as beautiful as those that could be obtained with negatives on glass or on celluloid. The specific claims are: 1. A process of making a sensitive layer intended for taking negatives in photographic apparatus, consisting in sensitizing gelatine by a mixture of a solution of 55 gms. silver nitrate in 250 ccs. distilled water, to which is added the quantity of ammonia required to dissolve the precipitate, and of a solution of 10 gms. potassium bromide, 30 gms. ammonium bromide, 0.50 gms. cadmium iodide, and 0.50 gm. potassium iodide in 250 ccs. distilled water. 2. A process of producing a translucent paper base for the sensitive layer as claimed in Claim 1, consisting in calendering three times at a high pressure a pure rag paper deprived of any impurities, then raising the temperature of the paper to about 80°C. and then calendering it again at a lower pressure, at a temperature of about 18°C.

B107643

J. A. Maker 215

**Photographic Cameras.** In a roll film camera, the center pins or pivots of the spool are moveable outwardly simultaneously to release the spool by means of a lever pivoted about a fixed rod and pivotally connected to one pin, the lever being connected also by a rod, fitted with a film-guiding roller to an arm on the outside of the pin. A spring normally holds the pins in engagement with the spool, and a braking-spring is secured to a fixed sleeve. The winding-on spool on the opposite side of the camera is fitted with a pin connected to a pivoted lever in turn connected by a rod to a plate in which the other pin is free to rotate. These pins are released by pulling out a folding handle, which is used also for winding, a ratchet mechanism of ordinary form being fitted to the pin. A spring holds the pins normally in engagement.

B108215

J. B. Campbell 241-243

**Printing Apparatus with Vignetting Masks.** A vignetting device comprises a number of moveable plates which are secured to a base, having an opening therein, by means of screws or their equivalents and slots, the plates being thus capable of adjustment to vary the size and shape of the vignetting opening. The plates have curved and serrated edges, and may have turned-up edges to facilitate adjustment.

B107810

R. C. Givler 315

**Cinematograph Apparatus.** Relates to cameras of the kind which includes mechanism whereby manipulation of an operating handle causes the film to be drawn out, positioned relatively to the lens, and the shutter to be operated, intermittently, so that a succession of pictures showing different stages in the movement of an object may be obtained; it consists of a roll-spool camera in which the take-up spool may be manually operated independently of the shutter mechanism so that the film may be primarily positioned for the first exposure. or, if desired, a portion of the film utilized in making exposures in rapid succession followed by single exposures. The operating handle drives gearing, by means of which the film spool is rotated and the shutter actuated. A mutilated gear prevents movement of the film while the cam acting on the lever operates the shutter. The shutter comprises a mutilated disk having abutments and engaging a stop to limit its oscillation. An escapement attached to the lever carries a spring which acts upon the disk.

On oscillating the escapement, the spring is strained and tends to move the disk, which movement is restrained until the wedge from the escapement is removed from under the abutment when the shutter will rotate until the stop comes against the stop, during which movement the opening moves past the lens. The take-up spool is rotated by the gearing and also may be rotated by means of the handle when the mutilated part of the gear is opposite the gear wheel. This position is indicated by means of indexes. If single pictures are required, the gearing is set in this position and an exposure made by a slight movement of the handle. The take-up spool has a slot engaged by projections on the gearing, and is supported at its lower end by a casing, attached by a ratchet gearing to the spindle which carries the handle. A carrier engages flats on the member and holds the spool in position.

B107839

W. Branson 3203

**Cinematograph Apparatus.** The masking-blade of a cinematograph shutter is made of glass or like transparent material, and has one or both surfaces fluted, ribbed, corrugated, or the like, so as to refract and diffuse the light beam; the masking-blade may be colored or covered with a colored film, and the shutter may also comprise one or more flicker-blades, these blades being transparent and tinted, opaque and imperforate, or opaque and perforated with apertures of variable width. The masking-blade in the shutter has a widely fluted surface, and an apertured opaque flicker-blade, the widths of the apertures being variable by means of adjustable apertured sectors which are pivoted one on each side of the blade, and are adjusted by means of a stud passing through a slot in the blade. The flutings in the masking-blade are preferably parallel to the direction of travel of the film when the film is in the light beam. Slotted blades may be provided between the blades. The colors of the masking and flicker blades may be complementary, and the color of the masking-blade may vary in depth, being preferably deeper at the part of the blade which traverses the light beams when the film movement is about half completed. The invention may be applied to shutters having two or more masking-blades.

B108247

W. Vidler 3203

**Cinematograph Projector Shutters.** The claim is for a pattern of shutter by which flicker, even at low speeds, is minimized. The shutter is formed from a disk of metal provided with cut-portions, leaving three blades joined together by a rim. These plates are perforated from the center to the edges in a particular manner so to produce the result desired.



# Monthly ABSTRACT Bulletin



December, 1917

Issued by the Research Laboratory  
**EASTMAN KODAK COMPANY**  
Rochester, New York

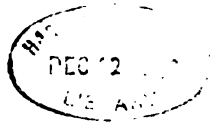


# Monthly Abstract Bulletin

Vol. 3, No. 10

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December, 1917



*S. F. Connor,  
Reimert*

## Photography

- The Use of Gelatino-Bromide Plates Saturated with the Developing Bath Before Exposure, and Night Photography  
R. Namias G5-0582  
Il Progresso Fotografico, 1917, p. 142

The author concludes that the treatment of a plate with a developing bath before exposure does not offer any advantage in the direction of increased sensitiveness; the only advantage would be in decreasing the time necessary for development. For night photography it is recommended that the plate be sensitized with a mixture of pinachrome and pinacyanol.

- Some Points in Strip Printing M. Levy J3  
B. J., 1917, p. 507

This deals with the making of bromide prints in strips, using some of the commercial printers arranged to make a series of prints on the same sheet of paper. Suggestions are made for the adjustment of negatives and for time saving methods for handling the paper. The whole article is practical and valuable.

- Quantity Production of Photographic Prints J3-241  
B. J., 1917, p. 511

Description of two recent patents for a strip printer for rapid enlarging apparatus. (See abstracts of British patents 108931 and 108691).

- The Effect of the Use of Parallel or Divergent Light in Printing R. Namias J3  
Il Progresso Fotografico, 1917, pp. 20, 49, 77, 111

Points out the advantage of using parallel light for printing, especially if contact is not perfect.

- A Printing Apparatus using Parallel Light R. Namias J3-241  
Il Progresso Fotografico, 1917, p. 185

Following the previous series of articles upon the use of parallel light, the author has made a printer fitted with a condenser and arranged to make use of parallel rays.

- Regression of Image on Development Papers of the Character used for Portrait Work J3-014  
Portrait, Oct., 1917, p. 1

An account of a series of experiments on the effect of humidity on the rate of fading of the latent image on Cyko paper, after exposure and before development. Attention was drawn to this phenomenon in the August number of Studio Light.

- A Developer for Producing Prints of Exceptional Beauty J4  
Phot. J. Amer., 1917, p. 461

The author recommends the following solution for the development of gaslight and bromide paper. Ammonium oxalate, 2 ozs.; ferrous oxalate, 3 drams; oxalic acid, 1 dram. Dissolve in 12 ozs. of boiling water, then add 8 ozs. of cold water and 2 drams grain alcohol. Development is complete in from 10 to 15 secs., when the prints should be placed in a stop bath of acetic acid before placing in the hypo solution. It is recommended to employ a bath of alum after the hypo, though the author does not say why a combined hypo alum fixing bath cannot be employed.

Decennia Practica—The Autochrome Process; Exposure,                      KG5-K33  
Development, etc., Part III.

B. J. Color Supplement, 1917, p. 38

Contains the Lumière methods for the control of Autochrome development and for a simplified treatment of the Autochrome plates, also methods of using acid Amidol and sodium hydrosulfite.

Waterproofing Soldier Prints with Kodak W. P.                      L6  
Studio Light, Oct., 1917, p. 18

Detailed directions for waterproofing prints with Kodak W. P. as recommended by the Research Laboratory.

Sensitometry                      A. S. Cory      016  
Mot. Pict. News, Oct., 1917, p. 2972 and Nov., 1917, pp. 3148, 3328  
A brief resumé of the subject.

Depth of Field in Cinematography                      A. Lockett      019  
B. J., 1917, p. 546

An article on the optics of depth of field giving a rule applicable to the special conditions which occur in cinematography. This rule is as follows: Multiply the focal length of the lens in inches by 50. The result gives the hyperfocal distance in feet with a stop of the same F number as the focal length and a circle of confusion of 1/600th inch.

Exposures Indoors                      023  
Phot. Min., Jan., 1917  
Gives practical information concerning indoor photography.

New Business and More Business                      0311  
Studio Light, Nov., 1917, p. 14  
An article explaining the nature and advantages of the portrait gift certificate.

Fog and How to Deal with it                      041  
Studio Light, Nov., 1917, p. 6

Real Causes of Blisters                      041  
Studio Light, Nov., 1917, p. 16

Brooch and Pendant Portraits                      C. U. Cooke      048  
Amat. Phot., Oct. 8, 1917, p. 229

Describes a method of making photographic pendants by transferring either a carbon print or a Kodak transferotype print to a watch crystal and backing this up with a reflecting surface of plaster of Paris.

Doretypes and How to Make Them

048-N1

Studio Light, Oct., 1917, p. 12

A Doretype, as introduced to the trade through the Eastman School of Professional Photography, consists of a black and white or toned positive on film or glass and painted on the emulsion side with gold bronze, or backed with tinted paper or fabric. The positive should be thin, and the bronze very finely divided, while it is recommended that the finished Doretype be displayed in a suitable frame or case.

Wide Angle Views from Matched Negatives

051

Studio Light, Oct., 1917, p. 6

The article describes how to make a panoramic print from two or more negatives taken from the same viewpoint, by means of a suitable vignetting.

Telephotography

R. Namias 052

Il Progresso Fotografico, 1917, pp. 11, 43, 72, 104, 129, 153, 177, 201, 225

This series of articles deals very fully with the theory and practice of telephotography, the optical principles involved being discussed as well as their application in practice.

A Theoretical and Practical Study of Orthochromatism R. Namias 056

Il Progresso Fotografico, 1917, pp. 1, 33, 65, 97, 135, 158, 190

This series of articles deals with orthochromatism in general and in particular with plates sensitized with erythrosin and eosin, very little being said about panchromatic plates. Methods of sensitizing are discussed, also the use of filters and of self-screened plates.

Some Points in Copying—IV

057

B. J., 1917, p. 494

This section of the series deals chiefly with the illumination of the copy including the various methods of using artificial light sources.

Flashlight Portraits

0581-1592

B. J., 1917, p. 541

In an editorial note some of the practical precautions necessary for flash-light portraiture are dealt with. It is stated that when flash powder is kept the light becomes yellow so that a larger quantity of the powder is required and it is consequently important to use freshly mixed flash powder.

Half Watt Installations

Practicus 0583

B. J., 1917, p. 543

Suggestions for the use of nitrogen tungsten lamps in portraiture. Various arrangements of the lamps are shown and the article contains a number of valuable suggestions.

Cinematography Prophesied

06

Mov. Pict. World, Oct., 1917, p. 542

An abstract of an article in the Photographic News, 1860, by Sir John Herschel in which he foresees the motion picture of to-day and the stereoscopic motion picture.

- Efficiency for Motion Picture Studios C. L. Gregory 06  
Mov. Pict. World, Nov., 1917, p. 698

Although in the past the motion picture industry has provided profits for producers, in view of the present keen competition, the author offers several suggestions for increased efficiency in working.

- Trick Work and Double Exposure 0631  
Mov. Pict. World, Oct., 1917, p. 542

This, the concluding article, deals mainly with "stop crank" and "reverse" effects.

- The Camera Man's Job 0631  
Mov. Pict. World, Nov., 1917, p. 698

A few words of advice to the ambitious camera man.

- The Mechanics of Film Splicing 0649  
Mot. Pict. News, Nov., 1917, p. 3324

It is recommended to splice film in such a way that the spliced portion lies entirely between two perforations and not on either side of the same.

- Important Data on Illumination 067  
Mot. Pict. News, Nov., 1917, p. 3498

The first of a series of articles on screen illumination, the efficiency of various light sources, and the optical system of the projector. Deals with the various standard light units as defined by the Illuminating Engineering Society.

- Practical Advice for Camera Men Bound for the Front 083  
Mot. Pict. News, Nov., 1917, p. 3504  
Mov. Pict. World, Nov., 1917, p. 1018

An abstract of a letter from a former staff man of the Gaumont-Mutual Weekly. The writer recommends film pack as the most reliable and compact method of making exposures. A useful method for purifying muddy water consists in adding an ounce of alum to a barrel of water and allowing the same to stand over night when the clear water may be drained off. The trace of alum thus introduced has no appreciable effect on the developer.

- Photographing from the Air. I. H. Voorwalt 083  
Lux Foto-Tydschrift, June, 1917, p. 181

The first part of this series of articles, of which the remaining parts have already been abstracted, has now come to hand. This deals with the use of orthochromatic plates and filters, which are stated to be essential, and with the question of the exposure, which is calculated on the basis of the exposure necessary to give a sharp image, having regard to the movement of the plane. No oscillatory or vibratory movements are taken into account, only those due to the horizontal speed of the plane being considered.

- The Photographic Service in the Italian Army      A. Gianbrocono      083  
Il Progresso Fotografico, 1917, p. 26

The article deals almost entirely with photography from the ground. This work is divided into two branches—the technical work for the army and the documentary work, which is devoted to the maintaining of a record of the war. The military photographic service is in the hands of the Photographic Service of the Signal Corps. This section is divided into four divisions: (1) Field photographers, who work on flat ground. Each section uses an automobile with three photographers and one officer. The cameras used are 13 x 18cm. and 18 x 24cm. (2) The Mountain Telephotographers, who employ mules and use a large telephotographic apparatus taking plates 24 x 30cm. (3) The Siege section, which utilizes wagons, each section having two photographers. (4) The Aeronautical Division, who are stated to use cameras 13 x 18cm. employing telephoto lenses and also apparatus with arrangements for rapidly changing the plates, apparently to take a continuous series of photographs.

- The Obtaining of Critical Definition in Photo-      L. T. Reicher      094 ✓  
micrography at High Magnifications  
Lux Foto-Tydschrift, 1917, p. 293

The author describes the difficulties which arise at high magnifications and discusses the so-called Hooke's joint and improvements made by Mathet in it. For critical definition the following points are of importance: (1) rigidity of the apparatus; (2) freedom from vibration; (3) elimination of the influence of heat.

- Some Consideration on Radiographic Technique      E. Giovanetti      099-XF6  
Il Progresso Fotografico, 1917, pp. 7, 38

Suggestions with regard to exposure and development in radiographic work.

- An Interesting and Economical Process of Photo-      R. Namias      /74  
graphic Printing  
Il Progresso Fotografico, 1917, pp. 208, 238

Paper is sensitized with a mixture of oxalic acid and ferric chloride, dried, and after exposure developed with an ammoniacal solution of silver nitrate.

- The Bromoil Process      /89  
Il Progresso Fotografico, 1917, p. 114

Collected opinions of a number of readers giving their methods of working the Bromoil process.

- Episcopic Projection and a Particular Type of      C. Bonacini      221  
Opaque Projector  
Il Progresso Fotografico, 1917, p. 228

General discussion of opaque projection with sketches of several types of projection apparatus, including one designed by the author, of simple construction and using two nitrogen tungsten lamps. A suitable magnification for this apparatus is stated to be  $7\frac{1}{2}$  diameters.

- A Rapid Enlarger G. Rovetta 222  
Il Progresso Fotografico, 1917, p. 81

Describes an apparatus arranged for the rapid production of a number of enlargements from a negative, the apparatus being of a vertical form, the light source at the bottom, then an enlarging camera, and above an apparatus corresponding to a contact printer.

- Concerning the Lens Hood J. Thomson 2672  
Photo Era, 1917, p. 221

Illustrates many forms of lens hoods and shows means of attaching these to the lens.

- A Cine Camera of Novel Design 312  
Mot. Pict. News, Oct., 1917, p. 2797

A description of a camera supplied by the Motion Picture Specialty Co., a feature of which is the relative arrangement of the lens and film magazines, the lens being situated between the two film boxes or magazines, which are placed side by side and are of 400 feet capacity. As a result of this, the exposure aperture and film moving mechanism are located at the back of the camera. The camera crank is located centrally on the camera base thus minimizing vibration. The film magazines are fitted with mouthpieces or light traps which open wide when the camera is closed, thus relieving the film of any undue pressure or frictional contact. The magazines and the casing are made of fiber composition and are practically indestructible.

- The Akeley Camera 312  
Mov. Pict. World, Nov., 1917, p. 1018

The Akeley camera has been adopted by the U. S. government for the use of the photographic division of the Signal Corps.

- The Most Wonderful Sensitive Material C. E. K. Mees  
Kodakery, Nov., 1917, p. 23

The retina of the eye is likened to a sensitive photographic emulsion, with this difference, that the sensitiveness of the eye is not fixed as in the case of a film or printing paper, but changes with the brightness of the light. The eye behaves like a film which could automatically adjust its sensitiveness to the exposure, so that if the light were bad it could become more sensitive than the most rapid film made, while when exposed to full sunlight it could adjust itself to the intensity until it became less sensitive than the slowest photographic paper.

- New Goods  
Studio Light, Nov., 1917, p. 19

A description of several conveniences devised for the user of Eastman Portrait Film. These include a ground glassing frame for holding the film when coating with ground glass varnish so as to prevent the solution from reaching the opposite side of the film; a floating lid for film developing boxes which floats on the top of the solution and prevents oxidation and evaporation; the Eastman margin gage for leaving a uniform white margin around the print when trimming.

Mr. Charles Mendel, a leading figure in French photographic life, and publisher of many photographic journals and books, died on July 28.

## Photo-Engraving

### Waste Material

07

Photo-Engravers' Bulletin, Sept., 1917, p. 10

A firm keeping careful account finds that over 45% of copper and 39% of zinc were used over and above that sold.

### Adherence of Collodion

07004

Process Work and Electrotyping, Sept., 1917, p. 91

It is stated that if a film leaves glass easily it is due to too much alcohol in the solvents, or too much water. It is recommended to add ether 1 part to 5.

### A New Cold Enamel Process

07005

Process Work and Electrotyping, Sept., 1917, p. 92

Consists in flowing plate first with a black varnish, then with bichromated glue solution, after exposure and development the black varnish is removed from the white spaces by means of special oil developer applied with a plush pad.

## Physics

### Relative Sensibility of the Average Eye to Light of Different Colors and Some Practical Applications to Radiation Problems

W. W. Coblentz, W. B. Emerson

Bureau of Standards, Scientific Paper, Sept., 1917, No. 303

The spectral visibility of radiation curve of the eye was obtained for one hundred and thirty observers, of whom seven were color-blind. The energy measurements were based on the spectral energy curve of acetylene, which was determined anew and found to check with the authors' previous determinations. Determinations of the visibility curve were made by both the flicker and the equality of brightness methods; more consistent results being obtained with the flicker arrangement. Some striking results deduced were:— (1) The visibility curve seems to change perceptibly with increasing age. (2) The same curves were obtained for the right and left eye of a given observer. (3) The curves of no two persons were exactly alike, although some were very similar. (4) The point of maximum visibility of the average of one hundred and thirty subjects was  $\lambda=0.5576\mu$ . (5) The minimum radiation visibly perceptible was somewhat doubtfully calculated to be an  $8 \times 10^{-16}$  erg per second. (The value found by exact methods at the Research Laboratory is  $19.5 \times 10^{-16}$  erg per second.)

### The Resonance and Ionization Potentials for Electrons in Sodium Vapor

J. T. Tate and P. D. Foote

J. Wash. Acad. Sci., 1917, p. 517

The authors find that electrons having a velocity corresponding to  $2.12 \pm 0.06$  volts collide inelastically, without ionization, with the atoms of sodium vapor. The energy lost by the colliding electrons is probably radiated in light of wave lengths corresponding to the D lines. Electrons having a velocity corresponding to  $5.13 \pm 0.10$  volts are able to ionize the sodium vapor and cause it to emit a brilliant light. They further maintain that the results of their work afford another instance of the fundamental correctness of deductions based upon Bohr's theory of atomic structures.

The Photoelectric Sensitivity  
of Various Substances

W. W. Coblentz and W. B. Emerson

J. Wash. Acad. Sci., 1917, p. 525

The paper summarizes the results of an investigation of various substances (1) for an increase in electrical conductivity caused by the action of light upon them and (2) for electrical discharging activity when they were charged to a negative potential in an evacuated chamber and exposed to light. One disappointing feature of the investigation, as pointed out by the authors, is that no substance was found which is comparable in sensitivity with the potassium photoelectric cell and with the selenium cell.

The Structure of Atoms, and the Evolutions of the  
Elements as Related to the Composition of the  
Nuclei of Atoms

W. D. Harkins

Science, Nov. 2, 1917, p. 419

A very interesting paper dealing with the constitution of matter, bringing out a novel proposed structure for the 26 elements of low atomic weight.

Notes on the Absorption and Scattering  
of X-Rays and the Characteristic  
Radiations of J Series

C. G. Barkla and M. P. White

Phil. Mag., Oct., 1917, p. 270

This paper gives some very interesting experimental results showing the relation between wave length and absorption, together with a general discussion of some of the important relations connecting the phenomena of absorption, scattering, and fluorescence. The characteristic radiations of J series and absorption formulæ are also discussed.

On the Origin of the Line Spectrum Emitted by  
Iron Vapor in the Explosion Region of the  
Air-Coal Gas Flame

G. A. Hemsalech

Phil. Mag., Oct., 1917, p. 221

This paper brings out some very interesting facts regarding the factors which govern the nature of this particular line spectrum.

Note on the Production of Colored Flames of High  
Luminosity for Demonstration and Experimental  
Purposes

G. A. Hemsalech

Phil. Mag., Oct., 1917, p. 243

By means of small electric sprayers, a collector and a burner, the author has worked out a novel scheme for observing the spectra of the more volatile elements.

The Proper Type of Absorption Glass for  
an Optical Pyrometer

P. D. Foote, F. L. Mohler  
and C. O. Fairchild

J. Wash. Acad. Sci., 1917, p. 545

Because of the deterioration of the filament of the standard lamp in the Holborn-Kurlbaum form of optical pyrometer, the maximum temperature at which the instru-

ment may be safely operated is about 1400° or 1500°C. In order to measure higher temperatures, some mode of decreasing the light intensity entering the pyrometer is employed, usually an absorption glass. If the light is not strictly monochromatic, the absorption factor resulting from Wien's law would not apply, and since the condition of non-monochromatism is the one experimentally obtained, the authors describe an absorption glass which will obviate these difficulties.

**Neutral Glasses and Other Methods of Diminishing Incident  
Light in Illumination Photometry**

Trans. Ill. Eng. Soc., July, 1917, p. 190

A review of photometers in general with special emphasis of the inadequacy of all attempts to diminish the intensity of the light from the surface tested. (The author apparently is not acquainted with the neutral absorbing wedges made by the Research Laboratory.)

**The Preparation of Metallic Mirrors, Semi-transparent  
and Transparent Metallic Films and Prisms by  
Distillation**

O. Stuhlmann

J. Opt. Soc. Amer., 1917, p. 78

The material to be deposited is in the form of a fine wire, heated to incandescence by an electric current. It is placed in a vacuum directly over and moving across the object to be coated. The metallic vapor condenses upon the object in a uniform layer, the thickness of which can be controlled. The author believes this method superior to all others. Objections to other methods are pointed out.

**A Combination of Refractor and Diffusing Globe  
for Street Lighting**

W. Harrison

Trans. Ill. Eng. Soc., Oct., 1917, p. 305

The author describes and gives the distribution curves for this new type of diffusing globe. The data indicate that a higher total efficiency and better distribution for street and outdoor work is obtained with this than with either an opal or prismatic globe.

**Color Vision**

B. J. Color Supplement, 1917, p. 40

A discussion of the nature of white light and of the Hering color theory.

**A Standard Specification for Glow-Lamps**

Ill. Eng., 1917, p. 193

An abstract of specification prepared by the Swiss Union of Electricity Works.

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## General and Inorganic Chemistry

**The Manufacture of Nitric Acid from Nitre Cake**

J. Grossmann

J. Soc. Chem. Ind., 1917, p. 1035

On heating a finely powdered mixture of nitre cake with carbon, all the nitrate present in the cake is liberated as nitrogen peroxide. It is also possible to dispenæ with the carbon, the nitric acid being removed as such from the heated, powdered nitre cake by means of a current of air. In both processes the temperature is relatively low. Practical details of these methods are discussed.

### The Deteriorating Action of Salt and Brine on Reinforced Concrete

H. J. M. Creighton

J. Frank. Inst., 1917, p. 689

After a recapitulation of the literature of the subject and a consideration of the theory involved, the author describes a series of experiments carried out by him from which he draws the following conclusions: Concrete not waterproofed is more or less porous. Brine softens the surface and penetrates to the reinforcement material which it attacks causing expansion, which results in cracking the concrete.

### Silver Ammoniacal Salts

G. Bruni and G. Levi

Gaz. Chim. Ital., 1917, p. 259

The authors have measured the heats of solution of silver nitrate, silver nitrite, and silver perchlorate in water, ammonia solution, and ammonia, and from the results have deduced the composition of the various compounds of these silver salts with ammonia.

### The Reaction Between Silver and the Aqueous Solution of a Soluble Sulfide

F. L. Hahn

J. Chem. Soc., 1917, (ii) p. 371

When precautions are taken to exclude air, silver may be boiled for hours with sodium sulphide solution without evolution of hydrogen, the metal being unchanged, blackening taking place as soon as air is admitted. Hydrogen sulfide may also be passed through air-free water in which silver is placed without any blackening occurring. (Experience in the direct sulfur toning of silver images supports the conclusion that silver is unaffected by the solution of a soluble mono-sulfide, while it is readily attacked and sulfidized by the colored solution containing a di- or polysulfide, to which the colorless sulfide solution changes by aerial oxidation.)

### A Comparison of the Efficiency of Some Common Desiccants

M. V. Dover and J. W. Marden

J. Amer. Chem. Soc. 1917, p. 1609

Of the substances tested, copper sulfate was the least efficient, calcium oxide was about as efficient as concentrated sulfuric acid, magnesium oxide was effective, but its capacity for moisture was very small, and ignited aluminum oxide proved nearly as good a drying agent as fused potassium hydroxide and only slightly inferior to phosphoric anhydride.

### The Chlorides and Chloro Salts of Iridium

M. Delépine

Ann. Chim., 1917, p. 277

A presentation of the results of studies of the chloro salts of iridium previously published in Compt. Rend. and Bull. Soc. Chim., rearranged systematically.

### Properties of Barium Sulphate

Z. Karaoglanow

J. Chem. Soc. Abst., 1917, (ii) p. 387

Pure barium sulfate does not lose in weight when heated over a Teclu burner in either a platinum or a porcelain crucible. When of very fine grain, its solubility in pure water may be as high as 1 part in 230,000. Its solubility in various electrolytes is diminished by the presence of barium cations and sulfate anions, is unaffected by calcium cations and chloride anions, and is increased by hydrogen, potassium, sodium, strontium, lead, and ferric cations and by nitrate anions.

**Solubility of Calcium Sulfit in Water**

T. van der Linden

J. Soc. Chem. Ind., 1917, p. 96

The solubility of the salt, expressed as dihydrate, is one part in 16,000 at 30 C., and diminishes with rise of temperature to 1 part in 90,000 at 100°C.

**New Papermaking Process**

Paper, Oct. 3, 1917, p. 76

A description of a machine which moulds paper articles, i. e. bottles, by vacuum. Articles can be made faster and without waste.

**Clay Retention**

J. D. Rue and C. W. Hallahan

Paper, Oct. 3, 1917, p. 58

Studies in the effect on clay concentration, alum concentration and of alum and size.

**Chemicals Used in Ore Flotation**

O. C. Ralston and L. D. Yundt

J. Ind. Eng. Chem., 1917, p. 1058

Discussed the function of chemicals other than oil in the flotation process.

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**Analytical Chemistry****A New, Practical Colorimeter**

E. Moreau

J. Chem. Soc. Abst., 1917, (ii) p. 418

The apparatus consists of a flat-bottomed, graduated tube of the same internal diameter as the ordinary comparison tubes, which has sealed in near the lower end a lateral tube connected by rubber tubing to a reservoir, containing the standard comparison solution. A known volume of the solution under examination is placed in the comparison tube together with the reagent, and the tube is placed alongside the graduated tube, into which is then allowed to flow the standard solution and reagent, until the depth of color in the two tubes viewed vertically is identical. The amounts of the constituent to be determined present in the two tubes are inversely proportional to the volumes of liquid used.

**Method of Rendering More Sensitive Colorimetric Analyses**

G. LeRoy

J. Chem. Soc. Abst., 1917, (ii) p. 418

In the colorimetric analysis of water, for the purpose of estimating the amount of an unstable constituent, such as free chlorine, present in quantity so small as not to be detected by the ordinary methods, a known, sufficient amount of chlorine is added to the water to bring it within the limits of detection, and then the ordinary colorimetric estimation is performed.

**The Determination of Silver in Organic Compounds**

H. J. Lucas and A. R. Kemp

J. Amer. Chem. Soc., 1917, p. 2074

The silver salt is dissolved in a bare excess of a solution of sodium or potassium cyanide, and, after addition of caustic alkali, precipitated by sodium or potassium sulfide; the precipitate is weighed as silver sulfide, after drying to constant weight at 110°C. The method is shown to be a valuable one because of its applicability, speed and accuracy.

### Potassium Hydrogen Carbonate as an Analytical Standard

G. Bruhns

J. Chem. Soc. Abst., 1917, (ii) p. 419

The author confirms the conclusion previously arrived at by Winkler and Incze, that potassium hydrogen carbonate is a trustworthy analytical standard for all but extremely accurate work. It may be prepared even more simply than these authors suggest by allowing the ordinary "pure" salt in fine powder to remain exposed for several hours in a dry room. Standardized against fused sodium chloride, a sample prepared in this way was found to be correct to 0.02%. Solutions stronger than N/10 should not be employed, owing to the tendency to evolve carbon dioxide which is exhibited by concentrated solutions.

### A Convenient Automatic Device for Rapidly Washing Pipettes

A. V. Fuller

J. Ind. Eng. Chem., 1917, p. 1046

## Photochemistry

### The Temperature Coefficient of Photochemical Change for Hydrogen-Chlorine Mixtures in Monochromatic Light

M. Padoa and C. Butironi

Gazz. Chim. Ital., July, 1917, p. 6

The average results obtained were:

						Wave-length	Velocity-constant
White	"	-	-	-	-	—	1.29
Green	"	-	-	-	-	550-530	1.50
Blue	"	-	-	-	-	490-470	1.31
Violet	"	-	-	-	-	460-440	1.21
Ultraviolet	-	-	-	-	-	400-350	1.17

## Colloid Chemistry

### Internal and Surface Structures in Jellies. I.

W. Moeller

Chem. Abst., 1917, p. 2635

Observations on gelatine jellies before and after dehydration, and on the structure of gelatine subjected to the action of water vapor or warm water, heated to a temperature at which it begins to decompose, or subjected to the action of superheated steam and drawn out into threads, affords evidence in support of the view that gelatine consists of an irregular conglomerate of fibrils forming a network of alpha gelatine with beta gelatine in the intervening spaces. The structure becomes visible when the gelatine is subjected to any action which removes the beta gelatine. In these circumstances the fibril units of alpha gelatine undergo orientation to a greater or less extent, forming fibril groups which are visible in the ultramicroscope.

### A Suggested Form of Viscosimeter

W. C. Cope

J. Ind. Eng. Chem., 1917, p. 1046

A highly ingenious arrangement for accentuating the many errors of the short tube type of viscosimeter by making it one arm of a centrifuge.

## Organic Chemistry

### Some New Paper-making Materials 1411

J. Soc. Chem. Ind., 1917, p. 1004

An account of three materials, one obtained from Australia and two from Africa, from which papers of good quality have been prepared.

### Fibers from Various Sources 1411

J. Soc. Chem. Ind., 1917, p. 1003

A report from the laboratory of the Imperial Institute, London, upon ten samples of different cellulosic materials.

### Report of Committee on Sulfate Pulp on the Suitability of Various American Woods for the Manufacture of Kraft Pulp O. Kress 1411

Paper, Oct. 3, 1917, p. 26

A discussion of the various woods available together with tables giving average physical characteristics of various American woods, and average strength tests on Kraft papers made from these.

### The Chemistry of Cellulose and Its Important Industrial Applications H. S. Mork 1411

Paper, Sept. 26, 1917, p. 14

A general resumé of well-known facts

### Determining the Strength of Pulps R. S. Hatch 1411

Paper, Oct. 3, 1917, p. 40

Report of committee on standard methods of testing materials used in the manufacture of paper. Notes on the ball mill method of testing sulfite pulps for strength. Methods adopted and results are given.

### Factors in the Quality of Groundwood G. C. McNaughton 1411

Paper, Oct. 3, 1917, p. 36

Notes on Control of the Groundwood Process. The following factors are discussed: 1. Power available on any grinder unit. 2. Surface of pulp stone. 3. Pressure of grinding. 4. Speed of pulp stone. 5. Kind and condition of wood. 6. Human element. (The factor of temperature, which is of great importance, has been omitted).

### Nitrocellulose from Wood 1411-1512

Caoutchouc, 1917, p. 9304

In a process patented by Budde and the Hendon Paper Works Company, pulp from wood, alfalfa, straw or impure cotton can be made to yield nitrocellulose after a preliminary treatment with chlorine or bromine and subsequent washing, pressing and drying.

- Nitrocellulose from Fibers of Malvaceae Other than Cotton A. C. Vournasos 1411-1512

Caoutchouc, 1917, p. 9304

Nitrocellulose suitable for the manufacture of explosives or celluloid has been obtained by nitrating the fibers of the hibiscus cannabinus and other species.

- Cellulose from Sawdust 1411-1515

Caoutchouc, 1917, p. 9304

Wood cellulose can be partially converted into a viscose, which after the addition of water, is transformed into gelatinous cellulose.

- Paper Testing F. C. Clark, C. W. Rieser and J. E. Hafele 1412

Paper, Oct. 17, 1917, p. 11

Report of Committee on Paper Testing of Technical Association. The testing is divided into three parts, microscopical, physical and chemical. Methods adopted are given.

- Retention of Fillers by Paper O. Kress and G. C. McNaughton 1412

Pulp. Some Observations on the Retention of China Clay by Paper Pulp

Paper, Oct. 3, 1917, p. 50

Retention of China Clay by paper pulp under varying conditions, together with the effect of the clay on the strength, color and ink resistance of the paper. Methods and results are given.

- Penetration of Paper by Inks 1412

Paper, Oct. 3, 1917, p. 12

Various kinds of paper are printed with an ink made by grinding lampblack with "medium" varnish colored intensely scarlet with naphthylamine bordeaux. The penetration is determined by microscopical examination of thin sections.

- Concentration of Acetic Acid 1511

Caoutchouc, 1917, p. 9305

The process of the Akt. Ges. f. Anilin-Fabrikation consists in treating dilute solutions of acetic acid with the anhydrous sulfates of sodium, aluminum, magnesium, or zinc in presence of a suitable solvent such as chloroform, trichloroethane or benzene, and distilling.

- A Product of Deflagration of Nitrocellulose E. Trapani 1512

Gaz. Chim. Ital., 1917, p. 250

On gently heating nitrocellulose in a tube, as in the fume test, the vapors produced by the decomposition contain appreciable quantities of formaldehyde. A delicate test for this substance is described.

- Acetylation and Acetolysis J. Boeseken, J. C. v. d. Berg 1513

of Cellulose and Starch and A. H. Kerstjens

by Acetic Anhydride

Caoutchouc, 1917, p. 9302

It has been shown that for the acetylation of alcohols a suitable catalyst must be able to form loose compounds with substances containing the hydroxyl group; thus

sulphuric acid is the most active catalyst, while hydriodic acid acts more vigorously than hydrobromic acid, which in turn is more active than hydrochloric acid. In addition, the catalyst in the case of alcohols which are insoluble in acetic anhydride must tend to promote mutual solubility of the reacting substances. It is considered improbable that mono- and diacetyl derivatives of cellulose are formed as intermediate stages, as none can be isolated. A method is indicated for estimating the degree of acetolysis (breakdown) in cellulose acetates, and various analytical methods are discussed for the determination of the percentage of acetyl in a sample. Experiments on acetylation indicate that the reaction is of the first order, and the increased acetolytic effect of increased proportions of sulfuric acid as a catalyst is clearly demonstrated. The acetylation of starch is shown to take place more slowly than the acetylation of cellulose.

### Decolorising-Carbon

J. Soc. Chem. Ind., 1917, p. 1041

Report by the committee of the Royal Society on the production of decolorising-carbon. Wood when carbonized alone gave a useless product, but if first impregnated with milk of lime or calcium acetate and heated to white heat under a layer of lime, the resulting charcoal is highly active.

### Methylation by Means of Formaldehyde

E. A. Werner

Trans. Chem. Soc., 1917, p. 844

The mechanism of the reaction between ammonium chloride and aqueous formaldehyde is elucidated, and it is shown how good yields of either methylamine, dimethylamine, or trimethylamine hydrochloride can be obtained. Incidentally it is stated that commercial "formalin" contains only between 33 and 37% of formaldehyde.

### The Constitution of Carbamide

E. A. Werner

Trans. Chem. Soc., 1917, p. 863

By the study of the action of nitrous acid upon urea, it is shown that the carbamide formulation is inaccurate, and a more suitable formula is proposed.

### Bakelite and Its Applications

H. Lebach

Caoutchouc, 1917, p. 9300

First part of a series of articles on the chemistry of the interaction of formaldehyde and phenols. The series originally appeared in the English language, but the place of publication is not quoted.

### Biological Efficiency of Potato Nitrogen

M. S. Rose and L. F. Cooper

J. Chem. Soc. Abst., 1917, (i) p. 524

Nitrogenous equilibrium can be maintained on a diet in which potato constitutes practically the sole source of protein.

The death is announced of Clayton Beadle, collaborator with Cross and Bevan in investigations upon cellulose, especially in connection with viscose. He was also a recognized authority upon the technique of paper making.

J. Soc. Chem. Ind., 1917, p. 904

# From Eastman Kodak Research Laboratory

A Simplified Method of Writing Developing Formulæ . C.E.K. Mees

B. J., 1917, p. 535

Communication No. 52

The usual methods of writing developing formulæ make it difficult to compare different formulæ, so that it is not unusual to find several formulæ which are apparently quite different, but which, if written in the same form, prove to be identical in composition.

In order to facilitate the comparison of formulæ it is convenient to be able to write a formula in one line, thus enabling a number of formulæ to be written under one another and compared at a glance; the following notation enables this to be done.

The formulæ are expressed in grams per litre, the water being omitted, then if R stand for the reducing agent, A the alkali, S the sulphite and B the bromide, the formula is always written in the order R A S B, which is used as a mnemonic. Thus, 5-50-50-1 means 5 grams of reducing agent, 50 of alkali, 50 of sulphite and 1 of bromide per litre.

In order to indicate the particular substances used the reducing agents are represented by initial letters, P for pyro, H for hydrochinon, etc., while if no other specification is given A represents sodium carbonate (dry), S sodium sulphite (dry) and B potassium bromide; thus P 5-15-10-0 represents the following developer:

Pyro	-	-	-	-	-	-	-	-	5	gms.
Sodium carbonate (anhydrous)	-	-	-	-	-	-	-	-	15	gms.
Sodium sulphite	-	-	-	-	-	-	-	-	10	gms.
Water to	-	-	-	-	-	-	-	-	1000	cc.

Other chemicals are represented by their formulæ or by any other convenient abbreviation, so that the well-known hydrochinon-caustic potash formula used for Process plates may be written H12.5-KOH25-Meta25-12-5, this corresponding to:

A			B		
Hydrochinon	-	12.5 gms.	Caustic potash	-	25 gms.
Potassium metabisulphite	-	25 gms.	Water	-	5500 cc.
Potassium bromide	-	12.5 gms.			
Water	-	500 cc.			

Use equal parts A and B.

A convenient means of classifying developers containing a mixture of metol and hydrochinon as the reducing agent has been in use for some time in our Research Laboratory.

As a result of a series of measurements it was found that the formula 5-25-75-1.5 was most convenient and suitable for these developers, and this was entitled MQ<sub>x</sub>, the suffix X representing the percentage of the reducing agent which is metol, thus MQ<sub>20</sub> corresponds to 20% metol, 80% hydrochinon, or a developer of the formula:

Metol	-	-	-	-	-	-	-	-	1	gm.
Hydrochinon	-	-	-	-	-	-	-	-	4	gms.
Sodium carbonate	-	-	-	-	-	-	-	-	25	gms.
Sodium sulphite	-	-	-	-	-	-	-	-	75	gms.
Potassium bromide	-	-	-	-	-	-	-	-	1.5	gms.
Water to	-	-	-	-	-	-	-	-	1000	cc.

MQ<sub>0</sub> represents the the same formula without metol and with 5 grams of hydrochinon, MQ<sub>50</sub> corresponds to 2½ grams metol and 2½ grams hydrochinon, MQ<sub>100</sub> to 5 grams metol without hydrochinon.

The most useful members of this series have proved to be MQ<sub>0</sub>, MQ<sub>5</sub>, MQ<sub>15</sub>, MQ<sub>50</sub> and MQ<sub>100</sub>.

The Physical Characteristics of the Elementary  
Grains of the Photographic Plate

Millard B. Hodgson

B. J., 1917, p. 532

J. Frank. Inst., 1917, p. 705

Communication No. 56

The elementary grains of a photographic plate are defined as those individual silver deposits which are conditioned in position and size by the position and size of the original silver halide grains. "Grain" is thus distinguished from "graininess", by which is meant the agglomeration of these elementary particles either real or apparent.

Silver bromide is a crystal of the isometric system, occurring, in the average plate in a number of forms, some fragmentary and others more or less perfect. In size these grains range from  $0.2\mu$  (the approximate limit of resolution) to  $6.0\mu$  in greatest dimension.

In the normal development of these elementary particles, the reduction of silver begins usually at several points and continues more or less regularly until the entire grain is developed. The developed grain is distorted, however, from the regular shape of the parent crystal. The phenomenon observed by Scheffer—namely, the shooting out of "feelers" by the grain during development—was not observed. This effect is attributed by the present author to abnormal conditions.

The deposition of silver deposit in the film is shown under various conditions of exposure and development, by photomicrographs. The major portion of the paper is also illustrated by photomicrographs.

## Patent Abstracts

### U. S. Patents

1244107 W. G. Lindsay, Ar. to The Celluloid Co. B122

A process for making a filter base substance by mixing acetone-soluble acetyl cellulose with an aryl sulfonamide, a small portion of methyl or ethyl alcohol, and a diluent such as chloroform. Additional use of triphenylphosphate and allied substance is included.

1244108 W. G. Lindsay, Ar. to The Celluloid Co. B122

Same as Patent No. 1244107, alkyl aryl acetamides being used in place of aryl sulfonamides.

1244347 W. G. Lindsay, Ar. to The Celluloid Co. B122

A process of making a plastic mass using 100 parts acetyl cellulose, 20 to 50 parts ethyl-paratoluol sulfonamide, and 40 to 100 parts of ethyl or methyl alcohol.

1244348 W. G. Lindsay B122

Same as Patent No. 1244347, except that an aryl alkyl acetamide is used in place of the aryl sulfonamide.

1244339 W. G. Lindsay, Ar. to The Celluloid Co. B122

A solvent for acetyl cellulose composed of 40 to 100 parts ethyl or methyl alcohol, 20 to 50 parts of an aryl sulfonamide, and 10 to 40% of a diluent such as chloroform.

1242674 M. Fleischer 062

A Method of Producing Motion Picture Cartoons. The cartoons are worked up from projected images taken from ordinary motion picture films.

1240774 C. F. Pidgin, Assigned 6/10 to H. A. Johnston 0649-062

A Method of Producing Titles on Motion Pictures. The actors are provided with balloons of the kind which are normally coiled up but when inflated unroll into a straight form and bear an appropriate inscription. The actors blow the balloons to a position where they show appropriate inscriptions at the proper time. The images of the balloons are eliminated in the final pictures.

1243507 L. Germain 067

A Method and Apparatus for Projecting Titles to Motion Pictures. A strip bearing suitable titles is moved transversely of the path of movement of the motion picture film and in suitably timed relation so that it will be simultaneously projected with the pictures.

1244362 A. G. Ogden 07005

A Printing Device for Photo-mechanical Work whereby a number of prints from one negative may be had on a large piece of metal, each print being correctly positioned.

1243630 V. C. Ronning 07006

An Etching Device, consisting of the usual trough or tray in the bottom of which a rake or comb is made to reciprocate and so agitate the mordant coming into contact with the plate, which is supported face downwards.

1242523 G. R. Cornwall 0722

Device for use in Making Printing Plates by Photolithographic (Vandyke) Process. Consists in making corrections by means of a strip of printed matter which is coated with translucent adhesive material such as beeswax in benzol.

1243264 G. R. Cornwall 0722

Device for Making Printing Plates by Photolithographic (Vandyke) Process. Consists of rotatable vacuum printing frame and its accessories.

1238904 W. F. Folmer, Assigned to E. K. Co. 083

An Aerial Carrier for Photographic Film. It is a parachute mechanism for conveying roll films exposed in Aeroplane Cameras from the Aeroplane to the ground.

1241650 A. J. Mottlau, Assigned to G. E. M. Engineering Co. 083-219

An Aeroplane Camera in which the picture areas of a roll film are successively exposed automatically, the film winding and shutter devices being being alternately actuated by a spring motor. A focal plane shutter is employed, the slit of which passes transversely of the path of movement of the film.

1240344 F. E. Ives 1321

A Photographic Film, such as sensitized "carbon paper", covered by a temporary waterproof layer of surgeon's plaster, which may be removed prior to the exposure of the film and without injury to the latter. The protective action of the plaster permits the film to remain in a sensitized condition for an indefinitely long period.

1244254 F. M. Steadman 2102

An Automatic Focusing Device for Cameras. A tape measure mounted on the bed of the camera is so connected with the focusing mechanism that when the end of the tape measure is drawn out to the object, the camera will be automatically focused correctly upon that subject.

1243270 P. Dietz, assigned to Defiance Mfg. Co. 2105

A Winding Device for Roll Film Cameras. It relates particularly to the connections between the outer winding key and the inner key or gripper plate which engages in the slot of the winding spool. The inner key is removed from the spool in the usual way by pulling on the outer key, but is carried by a separate sliding rod which may be locked in its inner or outer position by the teeth carried on the outer key.

1244978 H. W. Hales 2105

A Roll Film Camera the back of which consists of a single piece of reinforced flexible leather, one end of which is attached to one end of the camera casing and the other end of which is detachably locked at the other end.

1240398 R. W. Wood 2106

A Method of Making Light Diffusing Screens which are alleged to be superior to ordinary ground glass as regards brilliancy of image. By a blast of abrasive, small spaced irregular pits are formed in the surface of the glass and these are etched to larger size by hydrofluoric acid.

1244851 F. Heath 215

A Pocket Camera designed to fold into a small space, being of the type in which the lens front folds outside of and on top of the body of the camera. There is provided a cutter for notching the film to indicate successive exposed portions thereof.

1243934 E. F. Harper 2151

A Back for Roll Film Cameras provided with a special focusing device including a ground glass frame and a collapsible hood. When the hood is opened outwardly, the ground glass frame is automatically shifted inwardly to register properly in the focal plane.

1242157 A. Droste 2152

A Roll Film Camera provided with a visible signal to minimize the danger of double exposure. Actuation of the shutter pneumatically operates the signal in one direction, while winding of the film actuates it in a reverse direction.

1241773 M. L. Severy, Assigned to Severy Mfg. Co. 2152

A Roll Film Camera provided with a connection between the film winding mechanism and the setting lever of the shutter, whereby the setting lever is locked after an actuation of the shutter until a fresh section of film is wound into place. The mechanism relates particularly to instantaneous exposures.

1242745 E. W. Tucker 2152

A Roll Film Camera provided with mechanism intended to prevent double exposure. The shutter is locked after each actuation until the lock thereof is released by the winding of a fresh section of film into place.

1241848 G. A. Goodson 2152

A Roll Film Camera of the box type having connections between the winding shaft and the shutter lever, with the object of preventing double exposure. The shutter lever is locked after each actuation until the winding of a fresh section of film releases the lock.

1240910 R. Wilmot 2153

A Roll Film Camera of the type having an opening in the back through which inscriptions may be written upon suitable film. Inside of the camera opposite the opening there is a film-support. Surrounding the rim of the opening is a clamping member moved downwardly by a thumbpiece to clamp the film onto the support. Movement of the thumbpiece releases a pivoted door over the opening in the camera back and a spring forces said door to its open position.

1243156 N. E. Goldfadden 231

A Pocket Flash Light Apparatus in which the powder is ignited by an electrically heated fuse, the dry battery for heating the fuse being carried in the handle of the device.

1243685 F. W. Barkley, Assigned to American Drafting Furniture Co. 247

A Photographic Printing Machine particularly adapted to blue print making. The sensitized sheet is fed forward beneath the lamp and over a supporting drum between an endless apron and a set of spaced cords running longitudinally thereof. The cords are oscillated to prevent them from casting a sustained shadow upon any portion of the sheet.

1243403 G. Hanlon 2541

A Developing and Fixing Tank for Roll Film. The film is drawn off the supply spool over guide rollers so as to form a series of loops by pulling on two cords connected to the end of the film and by pulling the black paper through a slot in the side of the apparatus. The tank is contained in a light tight bag, which enables the film supporting members to be removed from the tank casing without exposure to light and so as to permit washing the same.

1240425 E. Crusey 257

A Photographic Print Washing Machine provided with a removable wire basket for easy manipulation of the prints.

1240468 M. B. Martin 258

A Print Drying Apparatus of the type in which a belt carries the prints over the surface of a heated rotary drum. The hot gases formed in the interior of the drum are drawn outward and the heat therein utilized for drying the belt.

1243086 P. J. Marks, Assigned to E. K. Co. 2623

A Between-the-Lens Shutter of the setting type but having some of the conveniences of the automatic variety. The motor spring, when wound, possesses sufficient energy for twelve successive exposures, which can be made by merely repeatedly releasing the shutter without bothering with intermediate setting operations. The speeds are varied by an adjustable gear retarding mechanism.

1240651 J. Becker, Assigned to E. K. Co. 2645

A Focusing Camera in which a range finder of the aligned-image type is co-ordinated with the focusing mechanism of the camera so that the two will sight and focus on any desired object simultaneously. The range finder is of the pivoted mirror variety, the lower mirror being turned by an arm bearing a non-radial cam.

1240788 J. Becker, Assigned to E. K. Co. 2645

A Co-ordinated Focusing Camera and Range Finder, the latter being of the pivoted mirror type and one of the mirrors being a total reflection prism having a part of its hypotenuse face rendered transparent by a small prism.

1240335 H. Gindele 2653

A Photographic Roll Film Cartridge. The film is provided with slits or weakened lines to permit the tearing out of exposed sections prior to the use of the rest of the film. Special adhesive bands are stored along the film to unite the severed edges of the remainder of the film to the backing paper.

1244159 F. W. Adsit 2682

A Photometer particularly designed as a photographic actinometer. A flat selenium cell is placed in the focal plane so as to occupy substantially the whole picture area. The light which forms the image causes the resistance of the cell to vary and the variations are measured by a Wheatstone bridge arrangement, the pointer of which moves over a scale to directly indicate exposure times.

1241133 J. T. MacCurdy 2682

A Photographic Exposure Meter of the type in which a wedge of graduated opacity is moved across the observation opening until details are obscured in selected parts of the subject. Graded screens may also be shifted across the observation opening to adapt the meter to subjects of widely different brightness.

1242605

E. Schneider 3109

A Motion Picture Machine in which the effects of static electricity are intended to be minimized by a circulation of air.

1243262

C. J. Coberly 3109

A Device for neutralizing electric discharges in motion picture apparatus. It includes a hollow insulating casing adjacent the film, said casing containing an ionizing means, such as uranium, and being provided with windows through which the neutralizing ions pass to the film. The ions of opposite sign pass to a grounded plate

1242416

G. Bettini 317

A Motion Picture Apparatus using glass plates upon which the pictures are arranged in zigzag series.

1239119

A. Mehlfelder 3201

An Intermittent Gearing for Motion Picture Apparatus including a continuously rotated cam and a shaft intermittently driven therefrom through a set of studs.

1242428

F. L. Dyer 3201-322

A Motion Picture Projecting Machine of the intermittent type, in which the periods of movement are much longer than the periods of rest and the stopping and starting of the film is much more gradual than in the ordinary machines. A pair of automatic mirrors keep the image stationary on the screen, one of them reflecting the light, while the film is stationary and the other being tilted by a cam to hold the image stationary while the film is moving.

1242792

A. E. Gall and N. A. Curtiss, Assigned to 3202  
New Jersey Patent Co.

A Film Guide for Motion Picture Projectors which is moved to either open or closed position and locked in such position by a single toggle mechanism. An adjustment provides for accurate regulation of the pressure on the edges of the film adjacent the guide.

1241828

T. Davis 3203

A Motion Picture Projector in which the shutter is replaced by an auxiliary lens, which is oscillated back and forth in and out of the main lens-barrel. When in the main lens-barrel, the picture on the screen is transformed to a blur of light and the movement of the film, to change from one picture to the next, takes place during such blurring, whereby the screen is always illuminated and flicker is sought to be avoided.

1241869

R. W. Martin 3203

A Motion Picture Machine in which a shutter having one opaque sector is driven three complete revolutions while the film is fed through one cycle, the object being increased illumination.

- 1244728 F. C. Hamilton, Assigned to Eureka Projector Device Co., Inc. 3203

A Shutter for Motion Picture Apparatus in which the sectors are balanced by weights carried on a circular rim, the weights also serving to properly space the sectors.

- 1242894 C. E. Akeley, Assigned to Akeley Camera, Inc. 3204

A Film Box for Motion Picture Cameras of the type in which two sections are telescoped so as to rotate one upon the other to open and close film slots therein. The camera casing contains a catch which automatically engages one of the sections to hold it stationary while the other is being turned by automatically engaged mechanism.

- 1240882 H. E. Roys, Assigned to Cameoscope Corporation 3206

A Motion Picture Projector in which the lamphouse is carried by a pivoted panel, so that when the panel is turned to permit of access to the film, the lamphouse will be swung and the stream of light directed away from the film. The switch which stops and starts the motor also throws the light on and off.

- 1242006 E. A. Longenecker 3208

A Motion Picture Projector having means to avoid the necessity of rewinding the film between successive displays thereof. The film is fed from inner convolutions of the upper reel instead of from the outer convolutions, as is more usual.

- 1243739 A. S. Howell, Assigned to Bell & Howell Co. 3208

A Winding Mechanism for Motion Picture Apparatus. At the top of the machine there is provided a rewinding mechanism which is thrown into and out of operation by tightening or loosening a belt by means of a pivoted arm carrying an idler pulley. The machine is also provided with means for instantly stopping the film feeding shuttle at a predetermined position while frictionally stopping the main driving pulleys.

- 1242730 H. Siegel, Assigned  $\frac{1}{2}$  to Lewis Chasman 3209

An Attachment for Motion Picture Projectors for putting out the light when the feeding of the film stops or the latter becomes broken. An electrical switch is kept open by a centrifugally actuated weight driven from the moving film. When the film stops or breaks, the weight closes the switch and the main circuit breaker is magnetically thrown open.

- 1243067 E. B. Hulsey and J. A. D. Herrington 3209

A Stopping Device for Motion Picture Projectors. Whenever a break in the film occurs or whenever a marginal tear appears in the machine, an electric signal is automatically actuated to warn the operator and the fire door is lowered to cut off the light rays from the gate. At the same time the driving motor is stopped.

- 1241200 H. Csanyi 325-3201

A Film Feeding Mechanism for Motion Picture Projectors particularly those kinds which are for home use and employ parts of the ordinary roll film hand cameras. The feeding mechanism grasps the opposite edges of the film by flexing portions thereof.

1240954

A. M. Delmas 358

A Drying Rack or Drum for Motion Picture Film. The longitudinal film supports are faced with hollow rubber members which yield as the film shrinks.

1243272

C. L. Duhem 361

A Support for Motion Picture Cameras which shifts the latter both vertically and horizontally during the taking of a picture with the object of obtaining pictures which will appear in relief.

1244682

C. E. Akeley, Assigned to Akeley Camera, Inc. 361

A Motion Picture Tripod, the legs of which comprise telescoping sections which may be rapidly locked and braced in adjusted position and have a quick-detachable connection with the camera top. A toggle mechanism performs the double function of locking the telescopic sections and bracing them to give a truss effect.

1239295

M. E. Noble 387

A Cleaner for Motion Picture Film in which the film is drawn zigzag through a series of gauze covered rollers.

### British Patents

B109054

E. Cervenka K/35

Color Photography. Relates to screen processes for producing color photographs on a paper or other support. A negative is first made through a three-color screen having a geometrical pattern. From this, according to one method, a diapositive is then made, and is used to make a contact print on a thin layer of gelatine, gum, etc., which is sensitized with bichromate, and is carried by a screen identical as regards pattern and colors with that through which the negative is made, the screen itself being carried by a thin transparent base. The exposed screen is washed and immersed in a solution of chloride of tin or other substance which decolors the dyes beneath the unhardened gelatine etc., and is finally gummed, with the transparent base uppermost, onto a paper or other support. In an alternative method, the gelatine or like layer is omitted from the second screen, and the screen is treated with anethol or other substance which facilitates the bleaching action of light upon the dyes. This screen is exposed to light beneath the original negative until the exposed colors are quite bleached, the remaining colors are fixed with benzol, and the base is gummed to the paper or like support. The screen used in the production of the final print may have a base of celluloid, of a transparent cellulose material permeable by liquids, or of tracing-paper (paper covered with a layer of wheat starch and gum). When a base of tracing-paper is employed, the screen may be printed with fatty inks. The screens may be colored principally with aniline dyes, and the colors of the screen for the final print may be deeper in tone than those of the taking-screen. The final image may be transferred onto a base of glass, porcelain, etc.

B108989

J. W. Billings 067

Cinematograph Apparatus. A supplementary film carrying descriptive matter adapted to be thrown onto the screen is fed at irregular or arbitrary intervals.

**B108914**                      **A. W. Mathys (for P. Dietz, U.S.A.)**                      **221**

**Optical Projection Apparatus.** Apparatus for projecting a series of single pictures from a roll of film arranged so that the pictures can be projected either vertically or horizontally.

**B108691**    **S. Brossi**                      **222-241**

**Photographic Enlarging and Printing Apparatus.** Relates to enlarging apparatus adapted to produce, from cameras containing several negatives, including fixed name-and-address negatives, a large number of repeats upon sensitive sheets of paper staked in piles and arranged for intermittent feeding. Below the camera is a traveling box, manually displaceable in a frame against the action of a spring roller tending to wind upon itself a cord attached to the box. Within the box are six piles of sensitive paper, in lengths extending from end to end of the box, and pressed upwards, by springs and boards, against retaining angle-pieces so that as the spring roller and cord cooperate with a manually operated pawl and rack to step the box along from left to right, photographs may be taken in each position.

**B108679**    **S. Cocanari**                      **241**

**Printing Apparatus.** Prints on paper, films or plates, are printed, developed and fixed in daylight by means of an apparatus comprising a printing box communicating with a light-tight box in which a frame constructed so as to permit liquids to enter it, but to exclude light, is placed; cut sheets of paper are arranged in the printing box in a pile with sensitized surfaces uppermost, the frame being then removed and placed successively in the developing and fixing baths.

**B108931**    **E. F. Fox**                      **241**

**Photographic Printing.** In a photographic printing machine for producing a series of prints on a strip of sensitized material, the strip is clipped to one end of a rack-bar which may be intermittently moved forward by the continuous rotation of shaft. This shaft carries an arm to which is attached a pawl for engaging with the rack teeth, a cam for depressing a pressure block which presses the film etc., against the negative, and a cam which operates a plunger switch controlling the lamp; or, alternatively, a shade may be adapted to cover the lamp. At the end of the forward movement, the pawl is automatically lifted by a pin on a bell-crank lever, which is moved into the operative and inoperative positions respectively by pins projecting from each end of the rack-bar. The gripping-device comprises plates between which the film may be held by means of a spring-pressed bell-crank lever. The switch may be held in the closed position by a hook. The negative is placed in an aperture in the top of the light-box, and fitting over it is a frame which carries a mask.

**B109103**                      **F. R. Boardman, R. V. Boardman and F. Boardman**                      **241**

**Photographic Printing.** In a photographic printing-box, the lamps are arranged behind downwardly projecting baffles so that only light diffused from the sides and bottom of the box reaches the negative. The pressure pads are pivoted one to the other, and the pad is pivoted in vertical slots so as to allow of automatic adjustment when using glass of different thicknesses.

B108458

F. Treitschke 2626

**Shutter Releases.** During focusing, the lens diaphragm is kept fully open by engaging the spring-actuated adjusting-arm in a pawl. On pressing the exposure button the pawl is allowed to release the arm before the shutter and mirror, in the case of a reflex camera, are actuated. The arm comes to rest against a stop, the position of which determines the size of the aperture during the exposure.

B108474

Pathé Frères 3101

**Cinematograph Apparatus.** The feed-mechanism of a cinematograph camera for taking a large number of pictures per second, comprises feed-sprockets and a feeding-claw. The film is threaded so that it is slack to the extent of half a picture space between the sprockets. The claw is capable of oscillating freely between two stops on the carriage on which it is mounted, and the carriage is reciprocated vertically.

B108621

A. S. Howell 3104

**Cinematograph Cameras.** A film magazine for a cinematograph camera comprising two compartments for the reception of the delivery and take-up film spools, and has openings for the passage of the film to and from the exposure position which are automatically simultaneously closed upon opening the camera door. The magazine is provided with a plate attached to the top of the camera by a set-screw and provided with openings through which the film passes to and from the spools. Stationary projections covered with pile fabric co-operate with movable plates, also covered with fabric, to close the opening when the camera door is opened.

B108443

J. Dunlop 3201

**Cinematograph Apparatus.** Relates to the provision in feeding-mechanisms of means for preventing excessive movement of the top loop of a cinematograph film at the point where it enters the gate, and comprises a pressure roller carried by arms pivoted between lugs on a base and forced by a spring into engagement with the inside surface of the film when the device is secured to the top of the gate.

B108491

H. R. Evans 3208

**Cinematograph Apparatus.** Means for driving the take-up spool or for braking the paying-out spool of a cinematograph projector, comprising a spool-carrying member in variable frictional engagement with a positively driven or held member, the friction varying with the weight of film on the spool so as to tend to equalize the tension in the film.

# Monthly ABSTRACT Bulletin



January, 1918

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**EASTMAN KODAK COMPANY**  
Rochester, New York

1875

S. F. Currier,  
Ridgmont

# Monthly Abstract Bulletin

Vol. 4, No. 1

January, 1918



# Photography

Unit-Photography F. M. Steadman F5  
Photo Era, 1917, p. 276

Describes the use of the writer's actinometer, the Aabameter.

Making up Developers G1  
B. J., 1917, p. 566

While solutions of pyro preserved with acids will not keep very long, those preserved with sulphites according to modern formulæ have good keeping properties. The best working method for those using developers in considerable quantity would seem to be to make up stock solution sufficient for a week's use. By employing weights cut from sheet metal equivalent to a particular quantity the time occupied for weighing out a given formula can be greatly shortened.

The Laws of Fixation A. W. Warwick G6  
Amer. Phot., Nov., 1917, p. 585

By means of a simple apparatus, and estimating the amount of silver fixed out colorimetrically by precipitating with sodium sulfide, the author has confirmed a number of facts already established by Piper and others regarding the rate of fixing of plates and film with hypo solutions of different concentrations.

Projection Positives Obtained Directly G8-064  
La Cine-Fono, 1917, p. 111

If only a single motion picture positive is required some method of reversing the negative to a positive would be of considerable value. A method is described which is stated to have been worked out in the Garau laboratory in Italy. The developed negative before fixation is used to print a positive on the under-lying emulsion which still remains sensitive and has not been blackened during development. The film is supported on a drum so that the back is protected from the light and the exposure is therefore made only through the negative which is first developed. The condition for obtaining satisfactory results is a very thorough first development, which is done by means of a hydrochinon developer, development being slow and allowed to proceed so that the image penetrates completely to the back of the film. After washing, the drum is exposed to daylight for from 10 to 20 seconds, the drum being turned in front of a window during the exposure. Then the developed silver is removed in a bath of bichromate of potash and nitric acid and the positive developed.

Reducing Bromide Prints Dry, without Abrasion T.H. Greenall H1  
Phot. Focus, Nov. 14, 1917, p. 327

The reducing bath is: (A) Iodine, 12 grains; Potassium Iodide, 6 grains; Rectified Spirit 1 fl. ounce. (B) Saturated solution of Potassium Cyanide in pure rectified spirit containing 25% of added water. (C) .880 Ammonia. The working solution is prepared as follows: One drachm of A is taken and B is added until the iodine is decolorized and then about as much more additional B in excess. Half a drachm of C is added to prevent blue staining of the print. The dry bromide print, black and white or sepia, can be locally reduced by applying the above solution with a brush, the strength of the solution being reduced by the addition of alcohol when treating light tones. Action is stopped by applying spirit by means of a tuft of cotton

## Combination Pictures

H. Hyatt J5

B. J., 1917, p. 569

This describes and illustrates a simple method of combining a figure in one photograph with that from another.

## Sepia-toned Bromides: The Use of Barium Sulfide

D. Ireland J84

Abel's, 1917, p. 540

The writer recommends barium sulfide in place of the sodium or potassium because of the absence of odor and because it does not soften the gelatine.

## An Outline of the Cinekrome Color Process

A. S. Cory K/23

Mot. Pict. News, Dec., 1917, p. 4060

A description of the two-color additive Cinekrome process of the Kunz, Wheeler Moffat Company, Boston. The red and green separation negatives are obtained by means of a single lens and a semi-transparent mirror. The black and white positive is then projected through a system of two lenses, the images being superimposed on the screen by a suitable registering device. The Cinekrome projector is of the Duplex type, one side being used for black and white work and the other for color projection. By moving the arc lamp from side to side, a change may be instantly made from black and white to color. The projection filters employed are pink and green, so that while flesh tints are well rendered, blue objects appear green, and red objects appear pink.

## A New X-Ray Film

X12

J. Roentgen Society, Oct., 1917, p. 109

Messrs. Austin Edwards, Ltd., Warwick, England, have placed upon the market a film coated on both sides with sensitive emulsion for X-ray use. The advantage lies in the fact that increased absorption of X-rays is obtained with no increase in development difficulty. The films above mentioned are packed separately in black envelopes.

## Colored Images Produced by Persulphate Reducers

017-J83

B. J., 1917, p. 554

It is suggested that the colored image often obtained with the persulphate reducer is due to the bigger grains in the image being attacked without the smaller grains being affected, the resulting image being produced by closely massed minute grains of silver, which gives a warm tone similar to that obtained on lantern slides developed with a restrained developer.

## Color Sensitometry

A. S. Cory 018

Mot. Pict. News, Nov., 1917, pp. 3503, 3689

## Focusing Images in Mirrors

023

Kodakery, Dec., 1917, p. 25

An article drawing attention to the fact that when photographing an image reflected in a mirror, the scale should be set for a distance equal to that of the camera from the reflector, plus the distance from the mirror to the object.

- Telephotography** R. Namias 052  
 Il Progresso Fotografico, 1917, p. 249

Continuation of this series of articles, this article containing a discussion of the use of spectacle lenses for telephotography.

- Non-Swelling Developers, Fixing-Hardening Baths, and** 055-G5 ✓  
**While-You-Wait Portraiture**  
 B. J., 1917, p. 567

An article discussing J. I. Crabtree's paper on high temperature development in connection with formulæ for developers and fixing baths as applied to rapid photography.

- The Theory and Practice of Orthochromatism** R. Namias 0561 ✓  
 Il Progresso Fotografico, 1917, p. 254

Continuation of this series of articles.

- The Measurement of Absorption Spectra** A. S. Cory 095  
 Mot. Pict. News, Dec., 1917, p. 3883

- The Use of Photography in Astronomy** C. E. K. Mees 096  
 Kodakery, Dec., 1917, p. 18

- Tanks for the Photography of Objects in Fluids** 098  
 B. J., 1917, p. 579

An explanation of the best method of making a glass sided tank through which photographs can be taken.

- An Enlarging Easel and a Novel Method of** G. C. Weston 2237  
**Attaching Paper**  
 B. J., 1917, p. 580

In the apparatus described the enlarging easel is combined with a focusing movement so that fine focusing can be accomplished while a worker is close to the easel. The easel board is made so as to form a shallow tray which is filled with a hectograph jelly. On placing the bromide paper against this it becomes attached and is held without any pins or fastening device.

- Light Projection with Mazda C Lamps** 3207  
 Mot. Pict. News, Dec., 1917, p. 3878

An article prepared by the Engineering department of the National Lamp Works of the General Electric Company.

## The Porter Continuous Projector

322

Mot. Pict. News, Dec., 1917, p. 4056

A description of a motion picture projector in which the film is passed continuously through the gate without the usual intermittent motion, thus eliminating to a large extent the wear and tear on the film. The rear lens of the objective is split in two parts, and mounted on two shafts which connect with the shaft that carries the sprocket on which the film runs direct from the upper magazine, past the aperture plate, and into the lower magazine. This divided lens is made to revolve at the same speed as the sprocket, and as the pictures move up sixteen per second on the screen, the revolution of the rear objective deflects the light downward at the same speed that the images move upward, thereby neutralizing their movement and holding the picture steady on the screen.

## A Photographic Research Laboratory

C. E. K. Mees

Scientific Monthly, Dec., 1917, p. 481

A description of the work and organization of the Research Laboratory.

## Photographic and Cinematograph Trade in British Malaya

B. J., 1917, p. 559

The total imports into Malaya in 1916 amounted to \$230,000, representing an increase of \$70,000 over 1915. The exports, amounting to \$105,000, probably represent an exportation of cine films. It is stated that almost all the towns in Malaya have one or more picture houses. The chief sources of the imports are Great Britain and United States.

## Photo-Engraving

## "Century" Etching Machine

M07006

Phot. Engr. Bull., Nov., 1917, p. 34

A new etching machine, in which the plate placed face down is driven in and out of the etching solution. The usual exaggerated claims are made for it.

## Damage to Originals

07

Amer. Printer, Nov. 20, 1917, p. 46

A leading article pointing out that engravers are apt to spoil valuable originals through want of care. This article was followed by two letters mentioning the difficulty from the engravers' standpoint. (Amer. Printer, Dec. 5, 1917, p. 50).

## Printer's View of Photo-Engraver's Sins

J. W. Pell

07

Process Engrav., Oct., 1917, pp. 145, 147

Two articles pleading for the use of point measure instead of inches in making engravings, metal mounts, and greater accuracy generally.

## "Dry Effect" on Wet Collodion Negatives

J. A. Kohler

07004

Phot. Engr. Bull., Nov., 1917, p. 33

This troublesome defect, due to overintensification, can be remedied by coating a glass with collodion and restripping negative on to it before the collodion has had time to set.

**New Engraving Process**

07006

Amer. Printer, Nov. 5, 1917, p. 72

A new device known as the electrical process is announced by the Weeks' Engraving Company of Philadelphia. Plates are stated to possess many advantages over chemically etched plates, but no details are given.

**Half-Tone Depths**

N. S. Amstutz 07006

Phot. Engr. Bull., Nov., 1917, p. 7

An article and several tables showing depths of etching of different tones with various screens. These depths vary from 5.5 thousands of an inch in the shadows in the finest screen (200 lines) to 13 in the coarsest (65 lines) and from 14 to 30 respectively in the highest lights.

**Half-Tone Printing on Bond Paper**

E. St. John 07009

Inland Printer, Dec., 1917, p. 362

Recommends 110 to 133 line screen, good stiff ink, excessive squeeze, and gives hints regarding kind of overlay required.

**When Process Inks Crystallize**

07009

Amer. Printer, Nov. 20, 1917, p. 44

Recommended to add one or two ounces of castor oil to every three pounds of the red ink to prevent yellow and red drying completely, or to use one ounce per pound of ink of mixture of equal parts of paraffin wax, beeswax and gloss drying varnish, heated and mixed in the ink hot. Or to print the blue first and follow with transparent red and yellow inks.

**Method of Preparing Printing Surface with  
Mercurous Salts**

W.T. Wilkinson 07244

Process Engrav., Oct., 1917, p. 155

A method of making collotype plates said to be more sensitive and to yield more prints than the ordinary method.

## Physics

**Criteria for Gray Radiation**

P. D. Foote

J. Wash. Acad. Sci., Nov., 1917, p. 573

Further data with regard to the intersection of the log isochromatics for the radiation from a non-black body compared spectrophotometrically with that from a black body, as a criterion for grayness of the non-black body.

**Anode Resistance Films**

J. T. Tate and P. D. Foote

J. Wash. Acad. Sci., Dec., 1917, p. 593

A report of further experimental work which has confirmed the existence of an anode polarization film. Results as to the magnitude of the resistance and its variation with area are given.

- The Automobile Headlighting Problem Again** **E. J. Edwards**  
 Gen. Elec. Rev., Nov., 1917, p. 881

The advantages and disadvantages of various systems are discussed. The author recommends the controllable system capable of either downward light only, or both upward and downward light.

- Notes on a High-Temperature** **J. L. Haughton and D. Hanson**  
**Thermostat**  
 Electrician, Oct. 19, 1917, p. 89

- A Technical Specification for Metal Filament Glow Lamps**  
 Electrician, Oct. 26, 1917, p. 115

A summary of the technical conditions proposed by the Swiss Union of Electricity Works, referring to the sale of electric glow lamps.

- ✓ **The Physical Basis of Color-Technology** **M. Luckiesh**  
 Met. Chem. Eng., Dec., 1917, p. 631

An important contribution to the dyestuff industry and all industries using colors. This article is a résumé of a series of investigations carried out at the Nela Research Laboratory.

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## General and Inorganic Chemistry

- How Do the Warring Nations Obtain their Nitrogen** **S. Nauckhoff**  
**Supply ?**  
 Met. Chem. Eng., Nov. 1, 1917, p. 525

A description of the Chilean nitrate fields and their output, of the output of ammonium sulfate from coke ovens and of the processes whereby nitrogen is obtained from the air.

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## Colloid Chemistry

- The Stability of Emulsions in the Constricted Tube** **I. C. Hall**  
**and Marble Device for Anaerobiosis**  
 J. Phys. Chem., 1917, p. 609

- A Flexible, Plastic and Elastic Material to Replace Rubber** **A. D.**  
**Caoutchouc**, 1917, p. 9314

A product obtained by action of sulphur chloride upon a mixture of oils and residuary resins of caoutchouc and gutta-percha.

## Organic Chemistry

Details of the Sulfite Process. C. C. Heritage 1411

Paper, Oct. 31, 1917, p. 15, and Nov. 7, p. 13

Discusses woods suitable for pulping, object of the process, solvents of lignin, factors in the choice of pulp wood, acid making systems, storage of wood, operation of wood room, manufacture of sulfite acid and cooking.

The Action of Bleaching Agents on Fibers J. M. Matthews 1411

Paper, Nov. 28, 1917, p. 13

Gives the principles of bleaching.

Volume of Water Used in Papermaking 1411

Paper, Dec. 5, 1917, p. 23

Tables giving water content at various steps from heater to end of dryer for news at 600 ft. p. m., book at 300 ft. p. m. and all sulfite at 400 ft. p. m. At the beater pulp contains approximately 96% water, and leaves dryers with approximately 7-10% water.

Activities of the Government in Behalf of Better Paper Supply W. Fawcett 1411

Inland Printer, Dec., 1917, p. 371

Describes the work of the Federal Trade Commission, the Bureau of Standards, and the Department of Agriculture in this connection, with illustrations of the Government's experimental paper mill and digester for testing new substances for paper making.

Paper Testing—Report of Committee F. C. Clark, C. W. Rieser 1412

on Paper Testing of the Technical Association and J. E. Hafele

Paper, Oct. 24, 1917, p. 11

Continuation (This Bulletin, 1917, p. 218).

Laboratory Methods for Benzol-Recovery Plant F. W. Sperr, Jr.

Operation Parts I, II and III

Met. Chem. Eng., Nov., 1917, pp. 548, 586, and Dec. p. 642

A most timely article describing a system (Koppers) for the recovery of benzol and methods for control.

A Permanent American Dyestuff Industry H. G. McKerrow

Met. Chem. Eng., Nov. 15, 1917, p. 594

A paper read before the National Association of Cotton Manufacturers giving some interesting facts on the development of our dyestuff industry and making a plea for support from the Government and from consumers of dyestuffs.

Bakelite and Its Application H. Lebach

Caoutchouc, 1917, p. 9339

Continuation (This Bulletin, 1917, p. 219).

## From Eastman Kodak Research Laboratory

✓ High Temperature Development of Roll Film, J. I. Crabtree 053-G5  
Film Packs, Plates and Paper

B. J., 1917, p. 555

Communication No. 62

Roll film, film packs and plates whether new or date expired may be successfully developed under tropical conditions (up to 95° F.) by means of most developers, with the addition of 10% sodium sulfate and some potassium bromide in order to prevent fog, but much better with a special developer compounded with paraminophenol hydrochloride. Although it has been recommended to develop film in the tropics by hardening the same either before or after development by the addition of a hardener such as formalin, it is only possible to secure the best results by using a developer free from such addition agents. The formula for the developer is as follows:

	Avoirdupois	Metric
Paraminophenol Hydrochloride .....	60 grains	7 grams
Sodium Sulfite (E. K. Co.).....	440 grains	50 grams
Sodium Carbonate (E. K. Co.).....	440 grains	50 grams
Water to .....	20 ounces	1 liter

Rinse for only one or two seconds before placing in the fixing bath, otherwise the film is apt to soften in the rinse water.

The time of development with Eastman N. C. film at 95° F. for normal contrast is one and a half minutes though the time of development may be doubled by the addition of 100 grams of sodium sulfate (crystal) per liter of developer.

At temperatures up to 75° F. the regular acid fixing bath should be used, but at temperatures up to 85° F. the following chrome alum bath is necessary.

	Avoirdupois	Metric
Hypo .....	7 ozs.	200 grams
Sodium Sulfite, (E. K. Co.).....	1 oz. 175 grains	40 grams
Potassium Chrome Alum.....	2 ozs. 350 grains	80 grams
Acetic Acid (glacial) .....	40 minims	2.5 cc
Water to .....	32 ozs.	1 liter

Dissolve the sulfite and chrome alum together and add to the Hypo solution finally adding acetic acid.

At temperatures up to 95° F. the following formalin bath should be employed:

	Avoirdupois	Metric
Hypo .....	9 ozs.	250 grams
Sodium Sulfite (E. K. Co.).....	1 oz. 350 grains	50 grams
Formalin (formaldehyde 40%) .....	4 1/4 ozs.	125 cc.
Water to .....	32 ozs.	1 liter

First dissolve the hypo, then the sulfite, and finally add the formalin.

In order to eliminate the odor of the formalin, the bath should be enclosed in a covered tank if possible. The above baths keep well at the temperatures stated, so that for the professional and amateur finishing trade the special chrome alum bath is very suitable, while in special cases such as expeditionary work, when very high temperatures may prevail, the formalin bath will give perfect results.

Film pack may be successfully treated in a tray in the same way as N. C. film, though so far it has not been possible to devise a method for using the Kodak film or film pack tanks at the temperatures named.

Although no difficulty is to be expected when developing gaslight and bromide papers at high temperatures, the use of a stop bath of 3% acetic acid, and twice the usual amount of liquid hardener in the fixing bath is recommended.

## The Development of Cirkut Film

J. I. Crabtree G5

## Report No. 441

Cirkut film may be successfully developed at normal and at high temperatures by the tray or tank method, and likewise on an apron at normal temperatures.

For tray development, a long flat wooden tray covered with rubber cloth is especially recommended. For purposes of traveling it is a simple matter to construct a collapsible tray with a removable lining of rubber cloth which may be rolled up into a small space.

For deep tank development a wooden tank lined with cloth is recommended, and such a tank is especially suitable for development at high temperatures when using formalin.

It is possible to develop, fix and wash Cirkut film on an apron at temperatures up to 75° F., but for this purpose a specially thick apron is required which must be perforated and covered with a suitable fabric to permit of the access of the various solutions to the back of the film. When developing on an apron, it is necessary that the paper leader should adhere to the film through the various operations, and in order to ensure this, it is necessary to use a waterproof sticker of cotton fabric.

For rapid work, Cirkut film may be successfully dried by means of a saturated solution of potassium carbonate, and it is considered that this suggestion will be of value to men working at conventions and the like.

The instructions previously issued for the tropical development of N. C. film apply to the development of Cirkut film also.

The Use of Aluminum Sulfate for Hardening  
Paper and Film

J. I. Crabtree 1542

## Report No. 443

Equivalent amounts of potash alum and aluminum sulfate exert the same hardening action on gelatine, two parts by weight of aluminum sulfate being equivalent to 3 parts by weight of potash alum. Commercially pure aluminum sulfate is satisfactory if this does not contain too much iron, though if the sample is at all acid the solution should be neutralized by adding ammonia until a faint permanent precipitate is obtained. When mixing the usual liquid hardener formula with commercial aluminum sulfate, a slight milky suspension is formed, but this is harmless and settles out on standing.

The Relative Hardening Action of Potash and  
Ammonium Alum.

J. I. Crabtree 1543

## Report No. 444

The hardening action of potash and ammonium alum on gelatine has been measured by comparing the degree of swelling and the change in melting point of gelatine films treated with solutions of the two salts. No difference was observed between ammonium alum and potash alum in their hardening action when substituted weight for weight in the usual hardening formula. In practice, if any difference in hardening action occurs, this is due to the use of an impure ammonium alum, in which case, providing the impurities are harmless, an increased amount of ammonium alum should be used to such an extent that its content of aluminum sulfate is the same as that in the potash alum called for by the particular formula. When using ammonium alum, if the fixing bath becomes alkaline by virtue of a neutralization of the acid by the developer carried over, ammonia will be liberated resulting in the production of dichroic fog and stain. No trouble will be experienced however, if care be taken to keep the bath acid.

# Patent Abstracts

## U. S. Patents

1245976

S. Saton B12

Celluloid-like Substance and Process of making the same by treating vegetable proteids with organic or inorganic acid or phenols and hardening the resulting product with formaldehyde or its devivatives.

1245983

S. Saton B12

Process for Making Celluloid-like Substances by treating vegetable proteids with hydroxymethane-sulphonic acid.

1245476

W. G. Lindsay B122

Non-inflammable Cellulose Compound and Process of Making the Same. The patentee claims priority in the addition of triphenyl-phosphate to cellulose acetate.

1245152

A. Boularan dit Deval H2

A Process for Improving Weak Negatives. A positive is first made from the imperfect negative and then is intensified by a mercuric chloride-ammonia process. It is then coated with a bichromated gelatin pigmented with China ink. This is exposed and developed as in the carbon process. Finally the silver-mercury image is removed in Farmer's reducer.

1245822

J. E. Thornton, Assigned to K/43  
J. Owden O'Brien

A Method of Making Motion Picture Color Films. Alternate color selection negatives are made upon a single width of normal negative film. These negatives are printed upon a positive film coated upon both sides, so that the pictures corresponding to one color sensation are all grouped upon one side of the positive film and all pictures corresponding with the other color sensation are grouped upon the opposite side. During printing, the negative film is advanced two steps for each single advance of the positive film. The positive pictures are finally appropriately colored.

1245606

J. T. MacCurdy and H. N. Russell 016

Apparatus for Producing Photometric Wedges. In order to expose a photographic plate so that when developed its light transmitting power may vary according to a logarithmic law, the plate is placed in a revolvable plate carrier and is subjected to the influence of rays of light from a constant source of illumination while the plate is revolved past the rays at a rate determined by the shape of a predetermined curve. The movement is secured through a pulley in connection with a cable being subjected to a constant pull by means of a weight which moves with definite velocity times and not according to the law of gravitation. The plates so exposed are used as photometric wedges for the measurement of densities.

1245420 J. Altschuler and D. Isnow 0649

**A Film Cutting Indicator.** By means of this device the inspector or film director may indicate on a card the respective cutting and joining operations, so that ordinary workmen may later carry out the changes. The film is run through a projector driven in synchronism with the present device. In the latter, cards bearing serial numbers are moved, one number for each foot of film. At the desired time the inspector prints a symbol adjacent the number indicating the changes in the film at the point corresponding to such number.

1245424 G. W. Beadle 1212

**A Motion Picture Positive Film** in which the edges and perforations are reinforced by metallic strips.

1244525 Tsuneya Marusawa 1411

**Ammonium Bisulfite Cooking Process.** The object of the invention is to shorten the time of cooking, to obtain good quality with high yield and to lengthen the life of the digester. (See article in Paper Nov. 14, 1917, p. 18).

1236662 K. Birkeland 1511

**Concentration of Nitric Acid.** From the dilute acid (30%) a nitrate of a metal is made and subsequently decomposed by superheated steam, condensing and further treating the vapors so obtained.

1241995 E. Knoevenagel, Assigned to Knoll and Co., Germany 1513

**Modifying Acetyl Celluloses.** A rearrangement caused by heating in a dissolved, or at least strongly swelled state, acetyl celluloses which are insoluble in acetone, with catalysts possessing a weak hydrolyzing action, such as sulfites, bisulfites, chlorides or nitrates, or (in the absence of acid anhydrides) without the presence of water or even by water alone without a catalyst.

1245760 H. P. Moxon 214

**A Film System for inexpensive cameras.** The cut film sections are arranged upon a long paper backing, the whole film strip being arranged in a coil in one corner of the camera. The operator, by pulling out through a slot in the camera and tearing off successive sections of the backing paper, automatically draws the successive pieces of film into the exposure position and then into a storage chamber. The camera is sold all loaded with the film, so that the latter cannot be removed without partially destroying the camera.

1246263 H. Hafner 215

**A Camera** in which, after the front bed drops, the lens carriage is released and is moved out automatically by a spring motor. When the carriage releases a focusing stop, the shutter is automatically tripped.

1246531 W. D. Blair and W. J. Wright 2152

**A Roll Film Camera** in which the winding mechanism is driven by a spring motor and controlled by a stop, which successively engages detents located in a spiral groove. The film winding mechanism is connected with the shutter in order to be automatically released after each exposure, so that double exposure is prevented.

1246328 A. C. Rutzen 219

A Camera mounted upon a dummy gun support. The connection between the trigger and the camera shutter includes a rotary shaft located in the imitation gun barrel.

1246580 W. H. Fribley 241

A Timing Device for use in the machine described in patent No. 1,246,579.

1246579 W. H. Fribley 241

An Automatic Photo Printing Machine in which a large number of positives are printed successively upon a web of developing-out paper. It comprises a printing box carrying the negative and printing lamps and a paper carrier movable toward, from, across the printing box. The device is motor driven, so as to intermittently feed the proper amount of paper, press it against the negative, turn on the printing lamps and terminate the exposure at a predetermined time. The device may be set to make an unlimited number of prints or to automatically stop after a predetermined number have been formed.

1246620 L. F. Levy 242

A Pneumatic Printing Frame which is so constructed that it becomes self-locking with the reduction of pressure. The method is to provide at the edge of the rubber mat a separate specially formed channel which is exhausted, and this prevents air leaking in and destroying the vacuum.

1245848 D. R. Winslow 2541

A Roll Film Developing Tank in which the film is drawn from the spool longitudinally of the tank and over a roller to form a double loop, the traction means including a cord passing over a winding drum.

1245330 C. H. Gilbert, Assigned  $\frac{1}{2}$  to J. A. Bechter 275

An Electro Magnetically Vibrated Retouching Pencil.

1246198 W. Wenderhold, Assigned to Polychromatic Film Corporation 3101

An intermittent Feeding Device for use in Motion Picture Apparatus. It comprises a pair of claws moved through a definite cycle by means of a cam arrangement.

1244918 W. M. Thomas, Assigned to Thomas-Oberkirch Co. Ltd. 310

Reeling Apparatus for Motion Picture Cameras. The supply and winding reels are carried upon a special frame which is pivot mounted, so that as the film passes from one reel to the other the frame automatically shifts to economize space in the camera.

1245856 F. H. Avers 317

A Motion Picture Camera in which the pictures are taken in inclined transverse rows on a plate, there being employed a shutter with a series of spirally arranged openings passing over a battery of lenses arranged in line.

1244919 W.M. Thomas, Assigned to Thomas-Oberkirch Co. Ltd. 8201

An Intermittent Feeding Mechanism for Motion Picture Projectors. A continuously moving feeding reel cooperates with an electro magnetic film clamp which is intermittently actuated. A loop in the film is thus alternately formed and released between the reel and the clamp, the resiliency of the film serving to eliminate the loop and feed the film when the clamp is released.

1244920 W.M. Thomas, Assigned to Thomas-Oberkirch Co. Ltd. 8201

A Method of Intermittently Feeding Motion Picture Film, consisting in clamping the film at a given point to prevent movement, forming a loop behind the clamped portion and then unclamping the film to allow the resilient loop to straighten and thus advance the film a unit distance. See No. 1244919.

1245497 N. T. Nilsson 3201

A Combined Shutter and Film Feed for Motion Picture Machines. It comprises a shutter carried on one shaft and a film beater carried upon an intergeared shaft at right angles, to the first. The film beater is angularly adjusted on its shaft.

1245970 R. H. Richardson 3203

A Shutter for Motion Picture Projectors provided with two sectors, one of which is deep gray, while the other is lighter gray and covered with a fabric. The object is to eliminate flicker.

1245755 A. Mehlfelder, Assigned to J. F. Gilmore 3208

A Motion Picture Projector in which one film is automatically rewound, while the other is being exhibited. There are two sets of reels in the upper and lower magazines and at the end of each cycle of operations the positions of the magazines are reversed, the lower magazine being moved to the upper position and the upper magazine being moved downward, the two magazines being carried on a pivoted support. This brings the rewind film to exhibiting position and the exhibited film to rewinding position.

1245192 J. Chesler, Assigned to New Jersey Patent Co. 3209

A Control for Motion Picture Machines comprising an electro magnetic system which stops the motor when the film breaks or runs out. A roller carried by a pivoted lever normally presses against it and is supported by the film. When the support or the film is withdrawn, the lever tilts, closing an electric circuit which operates the motor control.

1245844 W. B. Westcott, Assigned to Technicolor Motion Picture Corporation 322

A Motion Picture Projector in which the film moves continuously while the picture is held stationary on the screen through the agency of a compensating device, which includes a rotary drum carrying a series of ninety degree prisms. The chief object is to speed up the machine to forty or fifty exposures a second, so that it is particularly adapted for three-color projection.

1246217 C. Anderson 322

A Motion Picture Projector in which the film moves uniformly and the pictures are held stationary on the screen by means of a compensating device, which includes an oscillating mirror located between the elements of the projection lens and actuated from a peripheral cam. Several adjustments are provided to allow for changes in the positions of the parts.

1245834

C. H. Verity 323

A System for Synchronizing Motion Picture Projectors and Phonographs. Moving with the phonographs are tapes bearing a series of numbers and the operator controls the speed of the phonograph so that the numbers on these tapes correspond with similar numbers on the motion picture film.

1245498

N. T. Nilsson 325

A Motion Picture Projector arranged in a cabinet for home use. The feeding mechanism is compactly arranged.

## British Patents

109532

H. A. Millar 049

Transparent Pictures. A transparent picture is placed between two thinly silvered mirrors. Either side of the device presents the appearance of an ordinary mirror, but by transmitted light the picture becomes visible. The mirrors may be secured by an adhesive or be enclosed in a frame. The apparatus may be used for advertising purposes.

109947

W. W. Colledge 2153

Photographic Cameras. A camera is provided with a transverse opening for the insertion of a title or other identification strip upon which the title, etc., is written so that, during the ordinary exposure, the title, etc., is photographed upon the edge of the negative.

109751

G. Landis 219

Small-arms Combined with Other Articles. Consists in adjustably mounting a Camera upon the barrel of a gun, the shutter being operated from the trigger by a wire or bulb.

109482

H. G. Ogden 241

Photographic Printing Apparatus. In a contact printing apparatus of the type in which the sensitized surface is moved relatively to the negative between successive printing so as to obtain a number of similar prints on the surface, the sensitized surface is carried by a frame which may be raised about hinges and also perpendicularly to the negative, and means are provided for quickly and accurately shifting the sensitized surface to the various printing positions.

109336

J. E. Bryant 2541

Trays, Dishes, and Containers for Roll-Films. Relates to developing-tanks of the kind comprising a tank body of flattened oval section, a spool or roll chamber at its upper end, a cover for the chamber, a spring gripping-member for the spool, and means for projecting the film into the tank. The tank having mounted on it a swinging spring member for gripping the film-roll, the member normally lying within the film-roll receptacle, provided with a hinged cover having an outer flat wall overlapping the flat wall of the receptacle, the other wall of which is curved.

109860 Soc. Anon. des Celluloses Planchon, and V. Planchon 2653

Roll Spools. In a photographic roll-film spool having a sensitive film and an opaque paper backing, an additional transparent film is applied to the back of the opaque paper over its whole length to protect the sensitive emulsion from contact with the paper backing. The additional film may be composed of collodion.

109879

R. Wardley 3202

Cine Apparatus. A shutter for a cinematograph projector comprises two apertured disks secured at a distance apart on a common shaft with the apertures of the disks in register. The shutter is placed with one disk in front of the lens and one behind it so that the light beam is completely cut off by rotating it through half the angle necessary with a shutter comprising one such disk only.

# Monthly **ABSTRACT** Bulletin



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**EASTMAN KODAK COMPANY**  
Rochester, New York



# Monthly Abstract Bulletin

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February, 1918



*F. F. Lowrey,*  
*Belmont.*

## Photography

### The Laws of Fixation

G6

B. J., 1917, p. 617

Editorial comment on the paper by A. W. Warwick in *American Photography*.

The slow fixing of very strong hypo solutions is ascribed to their failure to penetrate into the film; strong hypo extracts water from a gelatine film so that very little solution can be absorbed by it. The most rapid fixing is obtained with 40% solution.

### The Reduction of Intensified Images

H1

B. J., 1917, p. 616

Various methods are suggested for the reduction of negatives which have been over-intensified, the procedure depending upon the intensification method.

### Royal Photographic Society

H1 H2

B. J., 1917, p. 631

At the Royal Photographic Society Mr. C. H. Bothamley delivered the 20th Traill-Taylor lecture, which was devoted to a discussion of the persulphate reducer, the chromium intensifier, and of certain variations in uranium toning. He found the chief cause of irregularity in the persulphate reducer to be the presence of salt or other chlorides. He recommended the use of a dilute solution of hydrochloric acid in making up the chromium intensifier and described a three stage process of uranium intensification and toning, the negative or print being first bleached with a solution which converts the image into silver chloride, this latter being converted into silver ferrocyanide and this into the uranium image.

### Printing on Old Bromide Paper

M. Mayer J2

Il Corriere Fotografico, p. 3156

The utilization of old and deteriorated bromide paper is discussed. It is suggested that a hydrochinon developer should be used, restrained with bromide, or that in extreme cases a very small quantity of potassium cyanide should be added to the developer, the amount suggested being two or three drops of a 10% solution of cyanide with five or six drops of a 10% solution of bromide per 100 cc. of developer, an extreme amount of cyanide being represented by nine or ten drops.

### Toning Prints with Barium Sulphide

J84 1563

B. J., 1917, p. 633

Messrs. Rajar Ltd. recommend the use of barium sulphide in the place of sodium sulphide. They find it to keep better, not to soften the gelatine, and not to have so unpleasant an odor. The solution can be used more than once.

### Prizma's Latest Color Pictures

A. S. Cory K/24

Mot. Pict. News, Jan., 1918, p. 310

The camera exposures are made successively through alternating red-orange and blue-green filters at the rate of thirty-two pictures per second, as in the Kinemacolor system. A black and white positive is then made on ordinary positive stock and each red sensation image dyed red, and each green image dyed green. In this way each image is provided with its own projection filter of proper hue, so that by pro-

jecting in an ordinary projection machine at the rate of thirty-two or more pictures per second, the Kinemacolor effect is produced. The projection filters are somewhat bluer than the ideal scheme for two-color additive production, so that greens cannot be depicted, while the absence of sufficient green also prevents the formation of yellow. The red filter is strictly complementary to the bluish blue-green filter, so that pure whites are obtained. Although the combination of colors chosen has its limitations as regards the production of certain hues, the author is of the opinion that the filters chosen are on the whole more suitable than filters more nearly theoretically correct.

#### Decennia Practica

K/33

B. J. Col. Supp., 1917, p. 46

The Autochrome Process: Exposure, Development, etc.

#### Fading of Autochromes

K/33

Inland Printer, Jan., 1918, p. 494

Exposure of Autochromes to powerful flame arcs when reproducing them, will cause fading.

#### New Methods of Producing Tricolor Prints

W. T. Wilkinson

K/42

Phot. J., 1917, p. 229

The author prefers three different plates for the three filters, using an ordinary plate, a green sensitive plate and a panchromatic plate. For printing, he prepares carbon tissue pigmented with manganese dioxide, which after development can be removed by sulphurous acid, but for the yellow print he pigments with lamp black, obtaining a light gray tissue, which gives good gradations when dyed yellow. In addition to the superposition of the dyed prints he obtains satisfactory results by transferring the yellow print to paper and then transferring the pink and blue dyes to this by imbibition.

#### Trimming the Print

C. H. Trayvor

N

Kodakery, Jan., 1918, p. 20

An article which demonstrates by illustrations the advantages of trimming down prints. The amount of necessary trimming may be reduced by remembering this when making the exposure.

#### The Distribution of Light Intensity in

A. S. Cory

019

Photographic Images

Mot. Pict. News, Dec., 1917, pp. 4240, 4417, 4607 and Jan., 1918, p. 147

#### Optic Projection as a Problem in Illumination

J. A. Orange

019

Mot. Pict. News, Jan., 1918, pp. 142, 306

A treatment of the subject of projector optics from the "surface source" standpoint, instead of from the conventional "point source" method of treatment.

#### Reception-Room Specimens

H. E. Corke

0312

B. J., 1917, p. 594

Mr. Corke discusses albums for keeping specimens in the reception room and describes his own method, which is to make up specimen booklets of every different style of portraits made at the studio, one booklet for each style, and each booklet containing a representative collection of work in each style.

**The Photographer and His Customer** 0312

B. J., 1917, p. 606

Comments by Mr. F. M. Sutcliffe, quoted from the "Yorkshire Post," on the article on letter writing published in the "Professional Photographer" recently.

**Specialized Commercial Methods** 032

Photo Miniature, Oct., 1917

Giving valuable information about the methods, formulas and systems in use in commercial studios where photographic work is done on a large scale.

**Technical Photography and its Use in Industrial and Commercial Organizations** J. H. Graff 032

J. Ind. Eng. Chem., Nov., 1917, p. 1052

An article illustrating how photography can be used technically for better efficiency and to good advantage in science, engineering, industry and commerce. The author considers that no concern is so small that it can afford to get along without photography in one form or another. The functions of a photographic department may be as follows: 1. To make copies of drawings, books, etc. 2. To prepare records of construction and experimental apparatus. 3. To compile correct data for court and accident cases. 4. To prepare advertising illustrations. 5. To make color photographs for litho cuts, etc.

**Bloom on Negatives, Transparencies and Prints** 041 G6

B. J., 1917, p. 591

The whitish deposit which sometimes occurs on old negatives, etc., appears to be due to silver salts left in the film after fixing. Attention is called to the fact that a fixing bath as generally used contains a considerable amount of silver and will therefore not entirely remove the silver salts from the material. A complete preventative of bloom appears to be varnishing.

**Stains on Negatives and Prints** 041

Studio Light, Dec., 1917, p. 12

An article prepared by the Research Laboratory.

**Standards Adopted by the Society of Motion Picture Engineers** 06

Mov. Pict. News, Jan., 1918, p. 143

A review of a booklet published under the above title by the Society of Motion Picture Engineers.

**Formulae for Making Motion Pictures to Scale** 0631

Mov. Pict. World, Dec., 1917, p. 1634

Directions for calculating in advance the scale of magnification of pictures on the screen, so that a camera-man may predetermine the size of the projected image before the object is photographed.

**A Pyro Developer for Titles** 0643-163

Mov. Pict. World, Jan., 1918, p. 82

A formula, identical in composition with the Process Pyro formula for the development of Eastman Process film, is suggested for developing positive motion picture film for titles.

- Typography of the Movies E. G. Gress 0649  
Amer. Printer, Dec. 5, 1917, p. 25

A description of present methods of production of titles, with suggestions for improvement.

- Light Intensities for Motion Picture Projection J.T. Caldwell 067-324  
Mot. Pict. News, Dec., 1917, p. 4412

A paper read at the New York meeting of the Society of Motion Picture Engineers, discussing the relative values of matte and metallic surface screens, and the question of the most suitable light intensity on the screen under different conditions.

- "Rexo" Motion Picture Film 1212  
Mot. Pict. News, Jan., 1918, p. 149

Motion picture positive and negative film is now being manufactured under the trade name of "Rexo" by Burke and James, Inc., of Chicago.

- Film Shortage Imminent 1212  
Mov. Pict. World, Jan., 1918, p. 238

An abstract of a circular letter issued by the company to film producers, urging them, in view of the shortage of raw materials, to return all surplus film and worn out prints, as it is considered that it will be possible to make this scrap available for new film base.

- Serteka 1532  
B. J., 1917, p. 620

This is a preparation made by Mr. G. W. Secretan as a preservative for Amidol. It is stated by the editor of the British Journal to be quite effective and to reduce the instability of the Amidol developer, making it as convenient as MQ.

- Acetic Acid and Spirit Substitute in Wet Plate Developer W. J. Smith 163/63  
B. J., 1917, p. 610

Process Engrav., Nov. and Dec., 1917, p. 172

Water 20 oz., gelatine 1 oz., dissolve and add while stirring sulphuric acid 2 oz. To make developer take above solution 4 oz., ferrous sulphate 3 oz., water 60 oz.

- A New Kodak Enlarging Outfit 222  
Kodak Trade Cir., Dec., 1917, p. 8.

An enlarging outfit for the amateur, of the condenserless type, utilizing a 60 watt Mazda lamp fitted with a paraboloid reflector. The outfit, which includes an enlarging easel, is adapted for negatives 4 x 6 inches or smaller, and retails for \$12.

- A Combined Dark-Room Lamp and Negative Comparator I.H. 255  
B. J., 1917, p. 607

A dark room lamp for the printing room is fitted with specimen negatives with which the negative to be printed can be compared so as to determine the exposure time.

- The Kodapod 2614  
Kodak Trade Cir., Dec., 1917, p. 4

A pocket support for the kodak which may be attached to an object such as a tree by means of a spring-acting jaw.

The Kodak Self-Timer 2626

Kodak Trade Cir., Dec., 1917, p. 2

A pneumatic shutter release which can be fitted to the end of the cable release and thus enable the exposure to be made at any fixed interval, up to 3 mins., after setting the shutter. In this way it is possible to take one's own photograph, either individually or when in a group.

A Cine Camera of Eight Hundred Feet Capacity 312

Mot. Pict. News, Dec., 1917, p. 4611

A description of a Bell and Howell camera fitted with 800 ft. magazines, the B. & L. diaphragm, and the Goerz vignetting outfit, which is fitted to a projecting arm attached to the tripod head. By means of a sliding eccentric attachment, "spotting in" may be done from the side as well as in the center of the picture.

The Sheck Adapter 3207

Mov. Pict. World, Dec., 1917, p. 1500

A description of an adapter for fitting a Mazda lamp to a motion picture projector.

Mazda C Lamps for Motion Picture Projection R.P. Burrows and J.T. Caldwell 3207-067

Mot. Pict. News, Dec., 1917, p. 4326

An article from the Engineering department of the National Lamp Works of the General Electric Company.

Suggestions for the Operation of Mazda C Motion Picture Lamps L.C. Porter 3207-067

Mot. Pict. News, Dec., 1917, p. 4603

The Victor Animatograph Projector 325

Mov. Pict. World, Dec., 1917, p. 1633

A projector suitable for use in churches, schools, etc., unique feature being its "flexible" focus. For motion picture projection, the condenser is close to the film, but for stereopticon work the lamp-house is made to move backward several inches and the condenser used for motion picture projection is automatically lined with and locked to a frame carrying a second condenser, which remains fixed behind the slide carrier. The combination thus formed is correct for the projection of standard stereopticon slides.

The Duplex Polishing Machine 387

Mot. Pict. News, Dec., 1917, p. 4418

A description of a machine made by the Duplex Machine Company, Brooklyn, N. Y., for polishing newly made positives, and for cleaning old or used prints or negatives.

Dr. Mario Mayer of the staff of Il Corriere Fotografico died on Oct. 26 as a result of an accident while working on poison gas in his chemical laboratory. He was only 29 years old but had already made a considerable mark for himself in the photographic world.

Il Corriere Fotografico, 1917, p. 3157

## Photo-Engraving

Reproductions from Photographs that will Not Shrink

07001

Inland Printer, Jan., 1918, p. 494

Suggests paper be fixed to grained zinc with fish glue and sensitized with ferro-prussiate solution, afterwards making blue prints; paint over the part required to be reproduced with India ink; the rest of the print will not photograph.

Etching Steel

07006

Inland Printer, Jan., 1918, p. 494

Suggests that steel be coated with electro deposit of copper, also the following mordant: Mercury bichloride 1 oz., Alum 1 oz. dissolved by heat in 16 oz. of water, then add  $\frac{1}{2}$  oz. alcohol. (Ordinary perchloride of iron etches steel satisfactorily).

Rotary Photogravure Process

F. Nossel 0713

Inland Printer, Jan., 1918, p. 473

A brief general description of the process.

Training Disabled Soldiers for Process Engraving

Process Engrav., Nov. and Dec., 1917, p. 168

Engraving has been suggested for crippled soldiers in England and a scheme has been worked out. The engravers think they could absorb a number equal to about 10% to 15% of those at present employed.

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## Physics

The Fourth Colorless Sensation in the Three-Sensation W. de W. Abney  
Spectrum Curves when Measured on the Center of the Retina

Proc. Roy. Soc., Nov. 5, 1917, p. 1

The author measures roughly the spectral visibility of radiation for a range of from very low to high intensities. Owing to the fourth colorless sensation, radiation can be seen, but no color distinguished, by the fovea at low intensities, and by outer portions of the retina at higher intensities.

A Method of Monocular Stereoscopia

J. B. Tauleigne and G. Mazo

Particularly Applicable to Radiography

Compt. Rend., Sept. 17, 1917, p. 395

The source of x-rays is vibrated slowly back and forth, and the image on the screen viewed with one eye.

Two Cases of Congenital Night-Blindness

W. de W. Abney

Proc. Roy. Soc., Dec. 1, 1917, p. 59

These cases lacked the fourth colorless sensation; as intensity was lowered, sensibility to light and color was lost simultaneously. Their spectral visibility of radiation at ordinary intensities was the same as the normal eye.

**A Differential Spectro-Photometer**

G. A. Shook

Astrophys. J., Dec., 1917, p. 305

A double slit type of instrument. Movement of a graduated head opens one slit and closes the other, by which means the relative amount of light entering the spectroscopy from the two fields is governed. The instrument can be used as a spectrophotometer, a pyrometer, or for determination of reflection coefficients.

**Pyrometers and Pyrometry**

Electrician, Nov. 16, 23 and 30, 1917, pp. 226, 262, 301

A series of papers on the production, control and measurement of high temperatures.

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**General and Inorganic Chemistry****The Nebraska Potash Industry**

E. E. Thum

Met. Chem. Eng., Dec. 15, 1917, p. 692

A description of the methods used in recovering potash from the potash bearing lakes in Nebraska. Analyses of the water are given.

**Review of Gold and Silver Metallurgy**

Met. Chem. Eng., Jan. 1, 1918, p. 2

Market changes and recent processes are reviewed.

**Bibliography on Extraction of Potash from Complex Mineral**

E.C. Buck

Silicates such as Feldspar, etc.

Met. Chem. Eng., Jan. 1, 1918, p. 33

**Electro Plating Aluminum**

Brass World, 1917, p. 384

The United Smelting & Aluminum Company, Inc., New Haven, Conn., announce that they have patented a method for plating aluminum. Full particulars may be obtained from the company.

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**Analytical Chemistry****Study of a Test for Tartrates**

L.J. Curtman, A. Lewis and B.R. Harris

J. Amer. Chem. Soc., 1917, p. 2623

The test depends upon the solubility of cupric hydroxide in alkaline solutions of alkali tartrates. The limitations and proper conditions for the test have been carefully worked out. Ammonium compounds, arsenite, borate and phosphate give the test. The interfering agents are given. Under favorable conditions the test is sensitive to 0.2 mg. of tartrate.

**The Solubility of Silica**

V. Lenher and H. B. Merrill

J. Amer. Chem. Soc., 1917, p. 2630

The relation of the solubility of silica to the errors of rock analysis is discussed. New quantitative data is given which shows that the solubility of gelatinous silica is definite and is the same for all gels independent of the method of preparation. Solubility of ignited silica is the same but equilibrium is not reached even in several weeks.

**The Detection of Sulphur in Paper**

E. Sutermeister

Paper, Dec. 12, 1917, p. 20

A method based on the reduction of the sulphur compounds with zinc and acid with formation of hydrogen sulphide. The presence of .001 mg. of sulphur may be detected.

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## Organic Chemistry

**Phthalic Acid Derivatives, Parts V-XI**

D.S. Pratt, with G.A. Perkins,

A. B. Coleman and A. F. Shupp

J. Amer. Chem. Soc., 1918, pp. 198, 214, 219, 236, 245, 249, 254

A series of papers dealing with the color and constitution of various derivatives of fluorescein, mainly halogenated products. Owing to war conditions, the work on the absorption spectra of these compounds is incomplete, and has been withheld.

**The Temperature of Ignition of Gaseous Mixtures**

J. W. McDavid

Trans. Chem. Soc., 1917, p. 1003

Mixtures of gases contained in small soap-bubbles were ignited by an electrically heated wire, the temperature of which was accurately controlled. The following ignition-temperatures of air with different gases were recorded: Coal gas (15%), 878°C., Ethylene (10%), 1000°; Hydrogen (10%), 747°; Carbon Monoxide, 931°; Gasolene (fraction 0-80°), 995°; Benzene, 1062°; Ether, 1033°.

**A Constant Temperature and Humidity**

E.P. Veitch and E. O. Reed

Room for the Testing of Paper, Textiles, Etc.

J. Ind. Eng. Chem., 1918, p. 38

Indicates the variation of tests on paper with change of temperature and humidity and suggests design for testing laboratory. Gives the conclusions of the Leather and Paper Laboratory of the U. S. Bureau of Chemistry.

**A Method for Determining the Absorbency of Paper**

E. O. Reed

J. Ind. Eng. Chem., 1918, p. 44

Criticizes present testing methods and suggests a standard procedure for which several advantages are claimed; viz., that it indicates much more definitely the quality of a blotting paper.

# From Eastman Kodak Research Laboratory

Photographic Resolving Power

K. Huse

J. Optical Soc. Amer., July, 1917, p. 119

Communication No. 61 from the Research Laboratory of the E. K. Co.

Photographic resolving power is defined in terms of the distance by which two minute images lying adjacent to one another must be separated in order that when photographed they may be distinguishable as separate images and not merge into one in consequence of the grain structure of the emulsion. The object of this investigation was to determine the influence of the specific factors, exposure, development and wave length of light, on photographic resolving power.

The method employed consisted of photographing a fan-shaped converging grating in a reducing camera, fitted with a highly corrected telescopic objective. The measurements of the minute images thus formed were made on a micrometer microscope. Since the spacing of the grating and the scale of reduction are known, a numerical expression for resolving power is found. The sensitive material used was Seed Lantern plate. The errors involved in the method, due to the use of a lens and the personal equation, are proved negligible.

Resolution is shown to be extremely sensitive to exposure, there being a critical value where best resolution is manifested, serious over- or under-exposure being detrimental; it was also found that there is an optimum time of development. It appears that an exposure such that the densities lie on the straight line portion of the characteristic plate curve, and a gamma of unity, yield highest resolving power.

The developer used greatly influences the resolution. Twenty developers were investigated. The results obtained showing variation in resolution values varying from 47 to 77.

With regard to the effect of the wave length of the incident light, resolution is best for light of short wave lengths, the resolution decreasing to a minimum in the green and increasing again in the red, though not to such a high value as with blue light. In these experiments three types of photographic emulsions, ordinary, orthochromatic and panchromatic were used.

Printing Papers for X-Ray Negatives

M. B. Hodgson . X13

Report No. 448

The selection of a suitable paper for printing of x-ray negatives, as in the case of ordinary negatives, depends on the quality of the particular negative. In the case of negatives made by x-rays, however, the average quality is perhaps more nearly uniform than in the case of white light photography. The majority of x-ray negatives are contrasty—showing transparent areas and great densities; but others are flat owing to under-exposure.

Consequently, two classes of paper may be recommended for use. Either a long scaled "soft" paper such as Iris Artura or a contrasty one in extreme cases—Contrast Velox. For a medium class, Azo K is useful as having a fair degree of contrast but with rather good scale. The following grades of paper are therefore recommended for printing x-ray negatives:

1. Artura Iris, grade B, for very contrasty negatives.
2. Azo K, for medium contrasty negatives.
3. Contrast Velox for flat, under-exposed negatives.

Development should be carried out as recommended for the individual paper.

Spots on Film Caused by Aluminum Dust

J. I. Crabtree 041

Report No. 455

Dark spots on a sample of motion picture film submitted showed a central dark nucleus surrounded by a white incrustation (visible on the surface by reflected light) which in turn was surrounded by a ring of fog, with or without a tail. In some cases the tail was very pronounced and was of the order of a  $\frac{1}{4}$  inch long. From the

behavior of the incrustation towards acids the presence of aluminum was suspected; and it was found possible to duplicate the spots by allowing freshly scraped aluminum filings to fall onto a piece of moistened film; after allowing this to stand for a short time the film was developed, fixed, washed and dried in the regular way. It seemed most probable that the dust particles had access to the film in the camera, and on examining a number of motion picture cameras, particles of aluminum dust were found inside them. The importance of keeping the camera free from such dust is therefore apparent.

**Tinting Lantern Slides and Motion Picture** J.I. Crabtree 0645  
**Film by Means of Colloidal Inorganic Salts**  
 Report No. 266

Certain inorganic compounds such as the ferrocyanides of iron and uranium, lead sulfide, etc., when precipitated in gelatine in the colloidal condition are highly colored and transparent, and advantage can be taken of this fact for the tinting of lantern slides and motion picture film. For a blue tint, the film is first immersed in a 1% solution of potassium ferricyanide and finally washed. The depth of tint obtained varies with the concentration of the ferric alum, the time of immersion, the time of rinsing, and the temperature of the solutions, but is practically independent of the concentration of the ferricyanide. Uranium ferrocyanide (orange) and lead sulfide (brown) tints may be obtained in a similar manner. By precipitating a mixture of iron and uranium ferrocyanides in suitable proportion, tints intermediate between blue and dark orange may be obtained. Any tint may be duplicated within narrow limits, while the wearing qualities of the film are not affected by the process. The tints are stable to light, though the iron and uranium ferrocyanides are soluble in alkali.

**Test of Diffusing Glass** L. A. Jones  
 Report No. 436

A plate of re-enforced ribbed glass such as is used in factory windows to prevent glare was submitted to ascertain which position of the glass gave the best diffusion. Measurements were taken with the glass in four positions, viz:

1. The ribs horizontal with the smooth side nearest the light.
2. The ribs horizontal with the rib side nearest the light.
4. The ribs vertical with the smooth side nearest the light.
4. The ribs vertical with the rib side nearest the light.

It was found that much the best position was No. 3.

## Patent Abstracts

### U. S. Patents

**1247273** F. W. Hochstetter, Assigned to H. P. Patents K32  
 and Process Co., Inc.

A Shutter and Color Screen Device for Motion Picture Apparatus. It comprises an endless linked belt, the links of which removably carry color screens.

**1248587** H. Workman K/23

A Motion Picture Apparatus which may be adapted for standard film or for color work in which the color records are placed one above the other, on single width film or placed side by side on extra width film. A plurality of gates and special sprockets are provided.

**1248139** A. R. Lawshe K/42

A Method of Producing Color Photography. From the color selection negatives a red positive is prepared and a blue pigment positive, the blue positive being dyed in a yellow dye, said dye being finally decolorized in the parts of the image corresponding to blue in the object photographed.

1248864

F. E. Ives K/43

A Method of Producing Color Photographs or Films. There are first prepared red and green selection negatives, which are reversed with respect to each other. From these monochrome positives in complementary colors are prepared on film and cemented together face to face in register. If desired, one of the film bases may be dissolved off.

1247116

F. E. Ives K/45

A Process of Color Photography particularly adapted for the reproduction of Lumière autochromes. Two species are given. In the first the autochrome is merely developed, but not reversed, so as to give a color negative and from this, three-color selection positives are prepared and superposed. The yellow and magenta elements are formed by the colloid relief process, while the blue-green element is formed on a red sensitive silver bromide paper, which is subsequently toned by a ferric process. In the second species, a complete autochrome positive is successively printed upon color sensitive silver bromide films, using different colored lights, and the images treated with bichromate to selectively harden the gelatine. The silver is dissolved and the gelatine selectively dyed in a well-known way, the three resulting monochrome images being superposed in register.

1250099

D. A. Davis 12-243

A Film to which masks are attached in manufacture, thereby avoiding the necessity of an additional mask when printing later.

1249172

O. L. Mullendore and O. H. Stevenson 2105

An attachment for Camera Backs adapted to receive plate holders of smaller size than the ones normally used in the camera. It is designed to replace nested kits and comprises a three-sided open-ended frame fitting within the camera back and provided with guides into which the plate holders slide.

1248607

B. A. Brigden and G. C. Kehres 2152

A Roll Film Camera provided with a spring motor mechanism for automatically winding up the film after each actuation of the shutter, thereby avoiding double exposure and speeding up the operation of the camera. The arrangement is such that the film is under spring tension both when it is moving and when it is stopped, thereby tending to keep it flat.

1249612

H. J. Gaisman, Assigned to E. K. Co. 2153

A Camera adapted for the light printing of suitable inscriptions upon the plate or film contained therein. A translucent strip is so arranged that it may be written upon outside of the camera and then swung into the camera in front of the plate or film, so that when the latter is exposed the inscription will be properly printed. Special light traps prevent the fogging of the sensitive surface during the movement of the inscription-bearing member from the outside to the inside of the camera.

1249291

E. N. Millan 2172

A Commercial Copying Camera of the type using a web of sensitive paper. The latter, after exposure, is moved downward into a developing tank. After development, the developing tank and an attached fixing tank are moved horizontally relative to the paper until the developed sheet of paper slides into the fixing bath, where it is automatically submerged by special rods.

1247402

R. S. Hopkins 222

A Support for Enlarging Cameras consisting of pivoted arms which give a parallel motion to the camera, the axis of which is arranged vertically with the easel placed horizontally beneath it. A rack and pinion and a cam co-operate with one of the pivoted arms of the support, so as to keep the camera always in focus regardless of the scale of magnification. Also a spring counterbalances the weight of the camera and a special cooling means is provided in the light chamber.

- 1247565 F. W. Norton 241

A Motor Driven Photographic Printing Machine in which a cam arrangement periodically actuates the presser back and a commutator turns the light on and off.

- 1249699 J. G. Warren 241

A Photographic Printing Table which may be used either in daylight or electric light. The electric lights are carried by a detachable panel upon the insertion of which proper electrical connections are automatically made.

- 1247051 C. W. Wilson 243

A Mask for Making Photographic Prints. It forms a plurality of borders which enable the finisher, by trimming, to obtain different effects and cater to the tastes of different customers. The light resisting portion of the mask is provided with concentric sets of transparent border markings and with transparent guide-producing marks at the corners beyond the border markings. The guide markings facilitate trimming with ordinary shears.

- 1248695 O. M. Morris 243

An Adjustable Printing Mask comprising a right angled member, the arms of which carry scales and stops. The other two sides, completing the rectangle, are adjustable along the arms of the right angled member, the scales and stops facilitating the adjustment to different sized rectangles. The inner edges of the mask are provided with visually transparent material, which is opaque to the actinic rays.

- 1246974 J. L. Marquis 247

A Blue Print Machine in which the customary curved glass printing element is replaced by a semi-cylindrical curved contact member composed of fine wires inclined to the direction of movement of the material through the machine. It is alleged to be more transparent than glass, less breakable under heat and less liable to allow slippage, caused by electrification of the ordinary glass.

- 1247902 K. W. Thalhammer 2626

An Electromagnetic Shutter Controlling Device which enables the shutter to be operated from a distance so that the operator may include himself in the picture, or may take pictures of wild animals. A modification for motion picture cameras is disclosed.

- 1249351 J. H. Dolby 2626

An Automatic Camera Shutter adapted to be attached to the end of the ordinary lens barrel. It operates after a definite time interval to enable the camerist to include himself in the picture. A quantity of sand slowly passing through a small aperture, on the hour-glass principle, gradually shifts the center of gravity until a weight causes the shutter to operate.

- 1249602 L. De Florez 2653

A Roll Film designed to prevent overlapping of exposed areas, due to overwinding. The convolutions of the paper backing, which is wider than the film, are stuck together at intervals, the adhesive being just sufficient to offer an appreciable resistance to the operator when winding the film, thereby indicating that the proper amount of winding had been accomplished.

- 1247786 T. H. Blair 3201

A Motion Picture Apparatus in which loops are maintained at each side of the intermittently rotated feeding sprocket, so that the effect of the starting and stopping of the film will not be transmitted beyond the loops. The film is drawn from the supply reel and fed to the windup reel by continuously moving sprockets.

1247260 D. B. and N. Goldberg 3204

A Film Reel in which the tongue, under which the inner end of the film is attached, is arranged below the surface of the hub to avoid injury to the film, it being accessible for manipulation through the hollow hub of the reel.

1248456 P. L. Clark 3205

An Illumination System for Projecting Apparatus. It comprises a small light source and a set of juxtaposed sectors of a concentrating mirror located behind the source and producing at the plane of the picture an area of maximum illumination corresponding approximately in shape to that of the picture.

1247646 R. M. Craig 321

A Motion Picture Apparatus Designed to Avoid Flicker. The film contains two series of pictures, the projector being so arranged that while one picture of one series is being shown, a corresponding picture of the other series is being moved into position ready for projection. Thus the screen is always illuminated.

1249230 R. K. Snow and A. B. Perdue 325

A Home Motion Picture Apparatus using the Opaque or Reflection System. The pictures are arranged helically on a rotary cylinder and are successively behind the exposure gate by means of a rotary and longitudinal movement of the cylinder. It is contemplated that the pictures, ready for attachment to the cylinder, may be printed in periodicals or sold as supplements for newspapers.

1249335 H. M. Connor and D. D. Miles 325

A Motion Picture Apparatus designed to be used both for projecting and printing by amateurs. When used as a projector, the film enters the projecting camera through a light trap slot in the top and moves through a light trap slot in the bottom, being carried on external reels. During printing, the negative film passes through these slots and through the camera, while a positive film passes from one roll in the camera through the printing gate with the negative film to a takeup roll within the camera.

1249376 J. F. Gilmore 388

A Rewinder for Motion Picture Apparatus. It comprises a pair of reels placed upon shafts arranged at angles to each other and so driven that one will rewind an exhibited film during the exhibition of a second film.

1247682 A. S. Howell, Assigned to Bell & Howell Co. 34

A Diaphragm for Motion Picture Printing Apparatus. It comprises two oppositely movable sliding apertured plates which are actuated by racks meshing with a common pinion, the operating handle of which moves over a scale. The amount of light is controlled by the extent to which the apertures in the plate overlap, such apertures being rectangular.

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### British Patents

110595 W. H. Doherty K2115

Camera for Producing Color Images provided with reflectors movable relatively to the axis of the lens.

110089

A. H. Walker K2119

**Color Photography.** Color separation is effected in apparatus for taking cinematographic or other color photographs by means of transparent reflectors having a dichroic quality; such reflectors may also be employed in apparatus for projecting color photographs. The reflectors may be made by applying coal-tar dyes in alcoholic solution to one face of a glass plate and allowing it to dry slowly. The dye used may be eosine, fuchsin, or sodium dibromfluoresceinate mixed with eosine. Alternatively, the reflectors may be formed by depositing a thin film of pure gold on a glass plate or on one surface of a compound prism. Separate color filters may be used in conjunction with the transparent reflectors to modify the color qualities of the light reaching the sensitive surfaces, or the bases of the reflectors may be colored. The reflectors may be used in any known apparatus for color photography, etc.

101972

W. B. Westcott K31

**Cine Cinematography.** The invention appears to consist in the use of a set of mirrors for forming two separate images with one lens. The device of a transparent grid or grating is shown. Reference is made by Comptroller of Patents to the specification of Colin N. Bennett, No. 10639, 1912, (B. J., May 30, 1913).

110115

L. McCormick 067

**Projecting Cinematograph, etc.** In the projection of a number of cinematograph or like pictures simultaneously upon a screen, the effect of overlapping edges is avoided by dividing the screen into sections by pictorial devices, such as trees, the center one having branches. The devices may be painted on, secured to, or projected upon the screen, and other parts of the surface may be similarly treated.

110292

H. Shorrocks 068

**Method of Giving a Stereoscopic Effect to Cine Pictures** by moving the camera back and forth sideways along curves having a radius of the distance of the camera from the chief object in the picture. (Cp. B15999-15; this *Bulletin*, May, 1917, p. 61.)

12759-1915

H. Branwhite 2152

**A Self-Winding Film Camera** in which the measuring device consists of a drum geared to the pay-out spool which measures off the length of the exposures without reference to the varying diameters of either spool or alternately in which the measuring device consists of a friction roller over which the film passes.

107890

H. L. Ide and R. W. Ide 2683

**Exposure Meter in Film Camera.** The claim is for a roll film camera having an aperture in the casing for access of light to a sensitive meter paper disposed on the end of a film spool, or in other ways. The outside of the casing carries fixed tints for comparison with the darkening produced by light on the sensitive paper.

110327

H. Pederson 3201

**Step-wise Feed Device** for cine film controlled by a spring band connected with the exposure slide.

110460

T. H. Hodgkins 3203

**Shutter for Cine Projection** consisting of a disk, one blade of which has an aperture cut in it covered with wire gauze, the intention being to diminish flicker.

110489

F. C. Jessett and C. W. J. Furmedge 3209

**Vacuum Chamber for Preventing the Overheating of Cine Films During Projection.** The chamber is rotated continuously about the optical axis, being arranged between the condenser and the source of light.

# Monthly **ABSTRACT** Bulletin



March, 1918

**Issued by the Research Laboratory**  
**EASTMAN KODAK COMPANY**  
**Rochester, New York**



*S. F. Lawrence,  
President*

# Monthly Abstract Bulletin

Vol. 4, No. 3

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March, 1918

## **Addition to Numerical Classification**

035 "Cirkut" Photography.

# Photography

- Where Dry Plates Come From A. T. Strong B11  
 Photo Era, 1918, p. 63

A popular article on the manufacture of glass for dry plates.

- Science and Practice in the Fixing of Prints G6  
 B. J., 1918, p. 14

Editorial note on the paper by Mr. Warwick, published in American Photography. It is pointed out that Mr. Warwick's conditions, under which he gives his attention to the fixing of a single sheet of paper, are far from the practice of photographers, and that the time given by Mr. Warwick for fixing must therefore not be taken as a basis in practical work.

- Cirkut Film Developing and Quick Drying G035  
 Photographic Rev., Jan. 1918, No. 1

An article embodying the information contained in report No. 441 from the Research Laboratory.

- Sulphide Toning J84  
 B. J., 1918, p. 25

An editorial note points out that it is probable that sulphide toned prints made directly and indirectly will not be of the same tone unless the process can be carried to completion, since in an indirect process the incompletely sulphided image consists of a mixture of silver sulphide and a silver halide which is light colored, while in the direct process it consists of a mixture of silver sulphide and black silver.

- A Dufay Screen-Plate Process K/32  
 B. J. Color Sup., 1918, p. 4

A quotation from La Nature of Nov. 10. M. Dufay, who is associated with MM. Lumière, has made a new screen film. The method is to pass a thin celluloid film between two rollers with parallel grooves of square section cut upon their surfaces, and thus the celluloid has similar grooves formed upon it. The film is then coated with a transparent fatty mixture and wiped off after the manner of wiping an etched plate after inking and before taking an impression from it. The film is next treated with an alcoholic solution of another color, and this penetrates the exposed surface of the celluloid. Thus there are formed alternating colored lines in perfect juxtaposition, which may be of a fineness as great as thirty lines to the millimeter. If the film is thin enough to permit it without introducing the possibility of parallax, the other side of it may be similarly treated, either simultaneously, or afterwards, so that two other colors may be introduced, or these may be added in the form of any microscopic figures that may be preferred. Three double pairs of colors are given: (1) yellow and blue, red and green; (2) yellow and red, blue and orange; (3) red and blue, yellow and violet.

- Decennia Practica—Color Photography K/33  
 B. J. Color Sup., 1918, p. 3

The Autochrome Process.—Defects and Remedies.

- Condensers and Projector Systems in Optical and 019  
 Enlarging Lanterns

B. J., 1917, p. 639

A consideration of the optics of the condenser from the point of view of light-gathering power. The author considers that the ordinary double plano-convex condenser may be assumed to work at an aperture of  $f/1.5$ .

- Chapters on Photographic Optics A. S. Cory 019  
 Mot. Pict. News, Jan. 1918, pp. 460, 612  
 Feb. 1918, pp. 752, 906

- The Regulation of the Rays in Cinematographic Projection Systems** 019 3205  
 Mot. Pict. News, Feb. 1918, p. 902
- Portraiture in a French Village** D. Charles 03  
 B. J., 1917, p. 641  
 Interesting account of the experiences of a photographer serving in the British army, who, being stationed in a small place in Northern France, assisted a local photographer in his portrait trade.
- Novelty and Economy in Lantern Slide Making** E. S. Maples 045  
 Amat. Phot., Jan., 1918, p. 38  
 The writer gives detailed instruction for making lantern slides, the sensitive material for which is the Eastman Transferotype Paper.
- Backed Transparencies** 049-03  
 B. J., 1918, p. 22  
 Letters from correspondents describing earlier experiments on backed transparencies similar to Doretypes.
- The Doretype—A DeLuxe Style of Portrait Photograph** 049-03  
 B. J., 1918, p. 4  
 Reprint of the article on the subject issued by the company.
- The Flashlight in Portraiture** 0583  
 Studio Light, Jan. 1918, p. 8  
 An article embodying the information contained in Communication No. 53 from the Research Laboratory.
- Submarine Cinematography** L. Calisch 063-098  
 Bioscope, Jan. 3, 1918, p. 18C.  
 A description of the apparatus employed by the Williamson Brothers for deep sea photography.
- Tinting and Toning of Eastman Positive Motion Picture Film** 0645  
 Mov. Pict. World, Jan. 1918, pp. 518, and Feb. p. 674  
 A reprint of the booklet published by the Company on the subject.
- Standards and Control in Cinematograph Projection** J. T. Caldwell 067  
 B. J., 1918, p. 29  
 Paper read before the Society of Motion Picture Engineers discussing the measurement of the illumination on the screen. The effect of the projection system and tinting filters on the intensity in the arc is also taken up.
- Photographing on Wood Blocks for Engravers** 07315  
 Phot. J. Amer., 1918, p. 96  
 Gives method of coating the surface of the wood with a light sensitive film.
- The Photographic Work of the Royal Naval Air Service** J. H. Gear 083  
 Phot. J., 1917, p. 248  
 In the course of his presidential address to the Photographic Society, Mr. Gear referred to the work of the Royal Naval Air Service in photography. He states that the cameras used are constructed almost entirely of metal and are worked from inside the fuselage. The equivalent focal length of the lenses varies from 10" to 40" and the plates from 4" x 5" to 6½" x 8½". About two dozen plates are used generally on a reconnaissance and one hundred contact prints are made and delivered to headquarters in less than three hours from the receipt of the exposed plates.

## Aerial Photo Surveying 084

B. J., 1917, p. 657

The Geographical Review for Nov. 1917 gives an account of the types of map in use for aeronautical work and recommends photography as a method of mapping a country.

## Photographic Surveying in Canada M. P. Bridgland 084

B. J., 1918, p. 5

Discussion of the method of photographic surveying developed by Dr. Deville for the Canadian survey. The apparatus consists of a simple  $4\frac{3}{4}$ " x  $6\frac{1}{2}$ " camera fitted with cross levels, and a light transit instrument. The plates used are Cramer Isochromatic, Seed L Ortho, and Wratten panchromatic, the latter plates being used chiefly with G filters.

## A Cheap Substitute for Safelights and Some Notes on Darkroom Lamps E. A. Salt 2555

B. J., 1917, p. 652

Suggests the use of safelights made from dyed gelatine sheets such as those made for theater work. The gelatine sheets are bound loosely between cover glasses, the buckling being provided for by allowing half an inch for binding at the edge. For examining negatives the author prefers a small lamp, so that the negative will cover the lamp and a large margin of unscreened safelight is not visible around the negative.

## "The Motion Picture Plus"

31-067

Mot. Pict. News, Jan. 1918, p. 89

By passing the film horizontally through the camera and projector, and utilizing two standard "frames", a picture is obtained whose width is equal to twice the height and whose height is equal to the breadth of the normal motion picture unit. In order to take advantage of the wider film, a special sized screen is employed. Although twice the usual length of film is required, it is claimed that the extra expense involved is more than offset by the fact that more actors and larger figures are permissible especially in the larger spectacular productions. (It is obvious that the only advantage of the system will lie in the lower magnification used, with a corresponding reduction of graininess, an advantage which certainly will not compensate for the increase in cost.)

## The Duplex Printer 341

Mot. Pict. News, Feb. 1918, p. 1050

A description of a film printer manufactured by the Duplex Machine Co., New York City.

## The Royal Photographic Society

B. J., 1918, p. 15

Editorial comment on the President's address.

## Co-operative Plate Making

B. J., 1918, p. 23

Among the advertisements in the B. J., the New Era Ltd. offers its shares to the profession, this being a co-operative plate works, intended to make plates for its shareholders.

Mr. F. A. Bridge, well-known in photographic circles as the general secretary of the British Photographic Convention, died on December 29th, 1917.

B. J., 1918, p. 8

Mr. G. C. Whitfield, who established the Paget Prize Plate Company in 1881, died on December 31st, 1917.

B. J., 1918, p. 21

Mr. C. H. Hewitt, the well-known instructor in photography at the Regent Street Polytechnic, author of many articles on photography, died on December 15th, 1917.

B. J., 1918, p. 31

## Photo-Engraving

Explosives Law

07

Inland Printer, Feb., 1918, p. 629

Federal Law H. R. 3932 makes it obligatory on all vendors, purchasers and users of Cotton for making Collodion, Silver Nitrate, Lead Nitrate, Nitric Acid, Potassium Bichromate, and Potassium Permanganate, to have a Federal Explosives License. It is suggested that the word "pyroxylin" should always be used instead of "gun cotton"; also that this ordinance may bring about new practices in photo-engraving, e. g., the more extended use of gelatine dry plates or even the re-introduction of collodion dry plates.

## Physics

Tests of Small Telescopes

E. Deville

Dept. of the Interior, Canada, Topographical Surveys Branch,  
Bulletin 41

The resolving power of small telescopes is dealt with both theoretically and experimentally. The resolving power of the eye was found to be  $1/2470$ . The resolving power of a telescope is limited both by the resolving power of the objective and by the resolution of the eye for a pupil aperture equal to the aperture of the exit pupil of the telescope, it being the lower of these two factors. It cannot be greater than the product of the magnification into the resolution of the eye, corresponding to the size of the exit pupil. With high magnifications the resolution is always less than the magnification. A telescope of low magnification, therefore, does not require a good objective; provided the resolution of the objective is a little greater than the magnification factor, objects should be seen as well as if the objective were of better quality; but conversely high magnification does not improve the resolution when the objective is poor. The photographic resolving power of a telescope will be higher than the visual owing to the shorter wave length of the light used. Experiments suggested that the protographic resolving power was about 6% more than the visual. The paper is of considerable value.

Mazda Lamps for Motion Picture Projectors

L. C. Porter

Gen. Elect. Rev., 1917, p. 979

A description of the construction and application of incandescent bulbs to projection machine work. Comparative cost data is given of Mazda vs. Arc lamp for motion picture work.

Interferometers for the Experimental Study

F. Twyman

of Optical Systems from the Point of View of the Wave Theory

Phil. Mag., Jan., 1918, p. 49

The author describes and shows the various use of two interferometer arrangements which are referred to as the prism interferometer and lens interferometer. The application of the testing of the lens systems is particularly interesting.

Light Distribution Around the Focus of a Lens  
at Various Apertures

L. Silberstein

Phil. Mag., Jan., 1918, p. 30

A very interesting and valuable paper giving a fully worked out example showing the phase retardation of all the elements of an originally plane wave produced by the passage through a given lens.

Presidential Address to the Illuminating Engineering  
Society

A. P. Trotter

Electrician, Dec. 28, 1917, p. 502

Especially interesting as showing the variety of applications of light with which scientists have to deal to-day. Mention is made of special war work on star shells, flares, parachute lights, luminous paints, and street darkening.

- Cyclic Candle Power Change with Alternating Current** D. L. Markle  
Electrician, Dec. 21, 1917, p. 466

A review of an article in the "Electrical World" describing the measurement of the candle power of a filament at different times during a cycle of alternating current. Method used was an adaptation of the step-by-step method of tracing A. C. wave forms. Little special apparatus is needed.

- 1917 Report of the Committee on Nomenclature and Standards  
of the Illuminating Engineering Society**  
Trans. Ill. Eng. Soc., 1917, p. 438.

A great many new units are defined and old ones revised.

- The Planck Radiation Law** F. R. v. Bichowsky  
Phys. Rev., 1918, p. 58

The author contends that quanta are not necessary for the proof of Planck's radiation law. It is only necessary to assume a threshold value.

- The Ratio of the Intensities of the D Lines of Sodium** V. Voss  
Phys. Rev., 1918, p. 21

It is proved by three independent methods that the maximum ratio of brightness of the two sodium lines is 2, contrary to some other authorities. For weak sources the ratio is less.

- The Geometry of Image Formation in X-Ray Analysis** H. S. Uhler  
Phys. Rev., 1918, p. 1

General theory for the short wave length of x-rays similar to the ordinary theory for light waves.

- The Size and Shape of the Electron** A. H. Compton  
J. Wash. Acad. Sci., Jan. 1918, p. 1

The electron is not a point charge according to this writer, but consists of a ring of electricity subject to rotation about any axis and of radius about  $2.3 \times 10^{-10}$  cm.

- Ionization by X-Rays in a Magnetic Field** A. Righi  
Ann. de Phys., Sept.-Oct., 1917, p. 159

The author presents new data on this subject and also gives results for various values of the magnetic field.

- On a New Secondary Radiation of Positive Rays** M. Wolfke  
Phil. Mag., Jan., 1918, p. 59

The author is apparently the first to observe the excitation of a penetrating radiation by positive rays. He also brings out some other interesting results.

- On the Nodal-Slide Method of Focometry** J. A. Tomkins  
Phil. Mag., Jan., 1918, p. 21

An interesting article taken up with a discussion and investigation of the general method described by Prof. Anderson in which he points out that there is an infinite or doubly infinite number of possible axes of rotation of the lens system.

- On the Asymmetry of the Illumination-Curves in Oblique  
Diffraction** S.K. Mitra  
Phil. Mag., Jan., 1918, p. 112

The author observed and photographed the unsymmetrical interference fringes of the light diffracted by two parallel reflecting surfaces in the same plane. He found that the illumination curve in the diffraction pattern due to an obliquely held reflecting surface is markedly symmetrical.

- On the Diffraction of Light by Cylinders of Large Radius** N. Basu  
Phil. Mag., Jan., 1918, p. 79

The object of these investigations was to find the true explanation of the diffraction of light by cylindrical edges and to develop a mathematical theory which would stand a quantitative test in experiment.

## Colloid Chemistry

**Mechanism of the Precipitation Process** H. R. Kruyt and J. van der Spek

Chem. Weekblad, 1917, 1-4, p. 95

Theoretical.

**The Fallacy of Determining Electrical Charge of Colloids by Capillarity** H. W. Thomas and I. D. Garard

J. Am. Chem. Soc., 1918, p. 101

**The Precipitation of Colloidal Gold and Platinum on Metallic Surfaces** E. B. Spear and K. D. Kahn

J. Am. Chem. Soc., 1918, p. 181

**The Molecular Mechanism of Colloidal Behavior** R. C. Tolman and A. E. Hearn

J. Am. Chem. Soc., 1918, p. 264

A study of the swelling of fibrin in acids, in relation to the adsorption of the acids. In the experimental matter, the work follows lines already laid down by Procter working with gelatine and hides. The interpretation involves the idea of pores in the colloid and formation of electrostatic double layers on these. It lacks both the generality and the quantitative verification afforded by Procter's application of the Donnan membrane potential.

**On the Swelling of Gelatine in Polybasic Acids and Their Salts** M. D. Fischer and M. O. Hooker

J. Am. Chem. Soc., 1918, p. 272

Irrespective of the manner in which mixtures of the polybasic acid and salts are prepared, the curve of amount of water absorbed plotted against composition gives a U or V shaped curve; from a minimum point there is a progressive increase to right or left as either acid or alkali is increased. (The behavior is similar to that found for wheat gluten by Hardy and Wood.)

**On the Swelling of Fibrin in Polybasic Acids and Their Salts** M. H. Fischer and H. Benginger

J. Am. Chem. Soc., 1918, p. 292

Cf. preceding Abstract.

**On the Liquefaction or "Solution" of Gelatin in Polybasic Acids and Their Salts** M. H. Fischer and W. D. Coffman

J. Am. Chem. Soc., 1918, p. 303

It is maintained that hydration (and swelling) of gelatin differs fundamentally from "solution", which is to be regarded simply as an increase of dispersity.

**Vapor Pressure Isotherms of Substances with Gel Structure** W. Bachmann

J. Chem. Soc. Abs., 1917, ii, p. 562

Experiments with hardened gelatine gels, working from the Zsigmondy calculation of the dimensions of capillary structures in relation to v. p. isotherms, show the canals are from thirty to a hundred times smaller than supposed by Bütschli's honey comb theory. Hysteresis diagrams similar to those obtained by Van Bemmelen for colloid hydroxides were obtained.

**The Absorption of Light by Molecular and Colloidal Solutions of Sulfur** N. Pihlblad

J. Chem. Soc. Abs., 1917, ii, p. 557

The absorption of a molecular solution of sulfur in ethyl alcohol corresponds to that of a limiting colloidal solution. Absorption of the colloidal solution is said to obey Beer's law.

## Organic Chemistry

**Action of Heat on Celluloid and Analogous Materials** H.N. Stokes and H.C.P. Weber  
Caoutchouc, 1917, p. 9388

Celluloid loses weight rapidly at 100° C., and in some tests deflagrates or explodes after less than two hours at 135° C. It requires more careful handling than safety matches or black powder.

**Air Plane Dopes** G. J. Esselen 1513  
J. Ind. Eng. Chem., 1918, p. 135

Nitrate dopes are discussed, but ruled out on account of the inflammability of the varnished textile. Fabrics coated with acetate dope will not take fire when gasoline is burnt upon their surface. Stress is laid upon the adhesive properties of the varnish, but it is pointed out that adhesion is greatly influenced by the sizing of the cloth; unless the size is soluble in the dope solvents there will be little penetration and the varnish will not adhere. It is thus preferable not to size the fabric before varnishing. Furthermore, the more colloidal the nature of the dope solution, the less will be the penetration. Fabrics varnished with acetate dopes deteriorate much less rapidly when exposed to the weather than when nitrate varnishes are employed; thus with a varnished cotton fabric three weeks' exposure reduced the tensile strength by 81.5 per cent in the case of nitrate dope and by only 12.3 per cent in the case of acetate dope. With regard to solvents for cellulose acetate, undoubtedly the best is tetrachloroethane; on account of its poisonous nature great care must be taken to provide good ventilation in the varnishing room. It is reported that its use has been prohibited in England, although many experts claim that it is an essential constituent of varnishes for scout machines. An account is given of a machine with wings of transparent acetate skin one hundredth of an inch in thickness; this was said to be almost invisible at a few thousand feet. While this skin is strong enough, a tear once started spreads rapidly; it is suggested to incorporate in it a loosely woven fabric of silk. Such a wing should have almost ideal properties.

**Factors Causing Variations in the Yield of Camphor** S.C. Hood 1517  
Caoutchouc, 1918, p. 9395

First installment of a series of articles based upon observations on camphor trees grown in Florida from 1907 to 1912. Methods of sampling and analysis are here discussed.

**Intensive Toluol Production I.** F. E. Lichtenhaeler  
**Proposed Improvements in the Absorbing and Stripping Process**  
Met. Chem. Eng., 1918, p. 144

A description of the Lummers system with an introductory part on war requirements and development of resources.

**Effect of Hard Water on Tannin** E. Schell  
J. Soc. Chem. Ind., 1917, p. 1243

When a water containing 40 mg. of calcium carbonate per liter is employed to extract tannin, a yield 2 to 2.5% lower is obtained than when distilled water is used.

**British Dyes Limited** J. Falconer  
J. Ind. Eng. Chem., 1918, p. 145

Chairman's address to a general meeting of shareholders, outlining the achievements and aims of the corporation, the attitude towards research work, and the difficulties experienced in obtaining cooperation with the government and firms engaged in parallel enterprises.

## General and Inorganic Chemistry

**Some General Aspects and Evaporation and Drying** H. K. Moore  
Met. Chem. Eng. 1918, p. 128

The subject is classified under six headings: 1. Direct evaporation or single effect. 2. Multiple effect evaporation. 3. Air or gas drying. 4. Radiant heat drying. 5. Chemical drying. 6. Mechanical drying. The various methods are discussed and charts given.

## From Eastman Kodak Research Laboratory

The Sensitometry of Roentgenographic Materials M.B. Hodgson X015

B. J., 1917, p. 654

Amer. J. Roent., 1917, p. 610

Communication No. 63

An adaptation of the H. & D. method to the testing of x-ray materials. The exposure is made accurate by the means of a mechanically controlled moving plate sensitometer, the x-ray source being a Coolidge tube operated by a transformer machine. Typical curves, representing the effects of development, exposure and tube conditions are given. The method is suggested as being convenient for the testing of intensifying screen efficiency.

The Relative Merits of Seed 23, Seed 27 and Seed 30 for Astronomical Purposes F. E. Ross 096

Report No. 460

The tests cover speed, size of grain, and resolving power. The relative speeds were determined by the amount of exposure necessary to render artificial spectrum lines to threshold density. Speeds determined in this way were found to agree very well with the H. and D. speed numbers. The average maximum diameter of grain was determined by measuring the largest grain visible in the field of the microscope, repeating for ten different fields, and taking the means. The results were as follows: Average maximum diameter of developed grain, Seed 23, 2.0 $\mu$ , Seed 27, 2.8 $\mu$ , Seed 30, 4.0 $\mu$ . Relative resolving power was judged by two tests (a) ability to resolve close parallel lines, (b) the ordinary fan test. These tests were made only on the Seed 27 and Seed 30 emulsions. Results from (a) and (b) were not in agreement. The fan test showed practically equal resolving power for Seed 27 and 30, whereas the parallel line test showed decidedly better resolution for Seed 30 emulsion.

NOTE—Since this report was made the Seed 27 plate has been taken off the market, its place being taken by the Seed 26X plate.

## Patent Abstracts

### U. S. Patents

1250713 J.E. Thornton, Assigned to J. Owden O'Brien K1212 K/44

A Film for Two-Color Motion Picture Work. It comprises a transparent base and a layer of exposed emulsion on each side thereof, the pictures corresponding to one color sensation being located on one side and the pictures corresponding to the other or complementary sensation being located in registry on the opposite side.

1253136 P. D. Brewster K31 K/43

A Process of Color Photography in which two superposed sensitive films are supported in the same film gate, where one of them receives an image corresponding to one color sensation and the other receives an image corresponding to the complementary color sensation. The apparatus which forms the images reflects the light an odd number of times to one of the films and an even number of times to the other. The films are colored after printing in the regular way.

1250186 H. W. Joy K32 K/24

A Motion Picture Projector adapted to feed ordinary film at the standard speed and to display color film at a higher velocity. This is effected by interchanging the proper shutters, threading the film over the cover feeding sprocket instead of over the black and white feeding sprocket and shifting the gearing connecting the sprockets with the source of power.

1253137

P. D. Brewster K/43

A Process of Color Photography using film coated on opposite sides. From a colored negative, images of substantially complementary color sensation are printed in registry on the sensitive layers of the positive film, whereupon they are colored in the regular way.

1250412

L. M. Anderson 0631

A Method of Producing Motion Pictures of the sketch or cartoon type. A screen comprising glass coated with a mixture of flour and water is interposed between the artist and the motion picture camera. When the artist draws on this screen with oil or water colors, the drawings become visible as dark lines on a white background.

1250582

H. Hartman, Assigned to Submarine Exploration Co., Inc. 0631 31

An Apparatus for Taking Submarine Motion Pictures. It includes a light projecting apparatus and a motion picture camera, the axis of which is inclined to the direction of the beam of light from the projector. The camera is driven by an electric motor controlled through a cable. A gyroscope stabilizer is located beneath the light projector and the latter is angularly adjustable with respect to the gyroscope.

1252800

A. J. Hain 07004

A process for producing half-tone printing plates without use of a screen by coating metal first with acid resist and then with sensitive emulsion applied in dots for example through a stencil. It is suggested that the varying size of dots required to give true reproduction may be obtained by intensification. (The process would apparently be inferior from theoretical considerations and impracticable from point of view of manufacturer.)

1250421

C. Blecher 0713

In photogravure printing in which illustrations and text are etched together, the white ground of the text is apt to be dirty. In order to keep it quite clean, the patentee suggests the dyeing of the illustrations portion of the positive so that the carbon negative relief will not be so high as in the white parts not dyed, i. e. as the ground of text, and therefore will not etch and consequently print clean.

1251237

N. E. Katz 1515

Process of Making Viscose. Together with the carbon bisulfide is added a plasticizing ingredient such as a fat, wax, gum, oil or carbohydrate.

1251690

M. E. Peteraon 2106

A Folding Hood adapted to fit over the ground glass of a Plate Camera in lieu of a focusing cloth.

1250792

R. S. Burdette 215 2653

Attachments for Roll Film Cameras which enable the latter to be used with smaller film than they were designed to take. The smaller sized spools are received in holders which fit in the regular film chambers, while a suitable small sized mask guides the film in the focal plane.

1249941

M. Feild 2152

A Roll Film Camera provided with a spring motor for winding up the successive film sections. The motor is so connected with the shutter release that a fresh section of film is wound into place immediately before the shutter is released.

1251654 F. Greene 2152

A Roll Film Camera provided with a connection between the shutter and winding mechanism which is designed to prevent double exposure. A sector carried by the folding bed of the camera normally meshes with a pinion on the film winding mechanism, so that the closing of the camera will wind a fresh section of film into position. The sector is shiftable on the camera bed and will only mesh with the pinion of the film winding mechanism after the shutter has been actuated.

1250973 W. L. Cook 2152

A Device to minimize double exposure in roll film cameras. When the shutter is operated, a slide is moved to obscure the window on the camera back through which the numbers on the film are observed. The operator cannot properly wind up the film until the slide is snapped back and consequently the arrangement serves as a reminder to indicate whether a fresh section of film is in place or not.

1253075 H. G. Mordaunt, Assigned  $\frac{1}{2}$  to Little 2152  
Giant Mfg. & Sales Co.

A Roll Film Camera modified to prevent double exposure. When the shutter is actuated, a signal is automatically set to indicate that fact. When a fresh section of film is wound up, a thickened place on the film engages a lever which changes the signal to show that the camera is ready for exposure.

1253076 H. G. Mordaunt, Assigned  $\frac{1}{2}$  to Little 2152  
Giant Mfg. & Sales Co.

A Roll Film Camera provided with a spring motor for winding up the film after each exposure. The push button which releases the motor for the winding operation is automatically pushed or cammed to its initial position during the winding movement.

1253077 H. G. Mordaunt 2152

A Roll Film Camera provided with a spring motor for winding successive sections of film into exposure position. There is a signal which automatically shows the word "taken" after the shutter is snapped and displays the word "ready" after the spring motor operates to wind a fresh section of film into position.

1253079 H. G. Mordaunt 2152

A Roll Film Camera provided with a spring motor for winding successive portions of film into exposure position. A signal is automatically connected to the shutter and to the spring motor in such a way that the release of the shutter and the winding of the film are indicated in proper sequence. The mechanism also locks the shutter after each exposure until a fresh section of film is wound into position.

1251105 W. A. Riddell, Assigned to E. K. Co. 2153

A Roll Film Camera of the type in which the back is provided with an opening through which inscriptions may be made upon a suitable film. The covering for the opening is located entirely inside the plane of the outer surface of the camera back and carries a stylus in a countersunk pocket.

1251915 P. C. Osteen 2153

A Roll Film Camera provided with an opening in the back through which inscriptions may be light printed upon suitable film. The inscription is written upon a strip of carbon paper on the outer side of the camera back, which strip is then shoved underneath a door, which normally closes the opening in the camera back. After the inscription-bearing carbon paper is thus located, the cover of the opening is lifted up and the inscription light-printed on the film.

1252605

A. G. Moss 2153

A Roll Film Camera provided with means for light-printing inscriptions on the film. A portion of the film is automatically masked during the ordinary exposure. An inscription-bearing slide is then located in front of the film so as to cut off light from all portions thereof except the area which was masked during the first exposure. A second operation of the shutter prints the inscription.

1251494

W. F. Folmer, Assigned to E. K. Co. 2155

A Panoramic Camera of the type in which a spring motor mechanism winds the film past the exposure slot while the camera is rotated about a vertical axis. A safety door closes the exposure slot, but is connected with the motor release, so that the operation of starting the motor will automatically open the slot. A ground glass carried on a sliding frame, in which is located the exposure slot, may be used to determine the limits of the picture. The arrangement is such that the ground glass must be moved out of the way and the exposure slot brought into proper position before the camera back can be fastened onto the camera.

1252829

F. W. Mueller 2155

A Panoramic Camera in which the film is arranged in the shape of a cone and a lens is mounted with its optical center in the axis of the cone, the lens rotating about such axis and being perpendicular to the elements of the cone. A spring motor-driven shutter rotates together with the lens. It is said to be particularly adapted to take the celestial dome from the earth or the entire landscape from the air.

1251076

J. L. Mauch 2193

An Apparatus for copying printed matter upon webs of Bromide paper. The Bromide paper is located in contact with the printed matter and between the latter and the light, the printing depending on the differential absorption and reflection of the light from the printed page. The mechanism is contained in a small casing, which is light tight except for a narrow slot where the Bromide paper is exposed. The web of paper passes downwardly in the slot into contact with the printed page beneath a motor-driven roller, so that the apparatus creeps along the page and successive portions of the web are brought into contact with successive portions of the page, the idea being to provide a portable apparatus that can be used in daylight in any library. The printing lamps may be driven from a portable storage plant.

1247841

A.W. Jacobs, Assigned to Star Headlight &amp; Lantern Co. 221

A simple Projection Apparatus for amateurs. It is stamped out of sheet metal and comprises a detachable ring for holding the condensers, together with a frusto-conical hood attached to the forward part of the condenser ring.

1247608

G. B. Alguire 2235

A Projector for automatically displaying a series of lantern slides in succession. The slides are arranged in an inclined pack from which the bottom one is fed forward. A swinging arm carries the displayed lantern slide back to the top of the pack and brings the forwardly pushed bottom slide into displaying position. A shutter automatically cuts off the light during interchange of slides.

1251222

O.H. Gruss, Assigned to Multi Speed Shutter Co. 231

A Device for electrically igniting a flash light and operating a camera shutter during the flash. It is adapted to actuate releases of either the cable or bulb type.

1252075

P. E. and P. W. Hamilton 241

A Photographic Printing Machine, the presser back of which is provided with a serial numbering stamp actuated each time that the operating lever is depressed.

1251143

F. J. von Gunten 242

A Photographic Printing Frame provided with a clock-work mechanism which moves a sliding shutter across the frame after a predetermined time to stop the printing.

- 1252513 F. S. Tyrrell 242  
A Photographic Printing Frame provided with nested kits in which the inner side of a negative is substantially flush with the inner sides of the kits so as to evenly support a mask.
- 1251052 R. Kroedel, Assigned to E. K. Co. 2541  
A Roll Film Developing Apparatus comprising an elongated tank, in one end of which the film strip is attached. The film is then unrolled in the tank by pushing the spool along it with a suitable rod, return motion of the spool being prevented by spring fingers in the sides of the casing.
- 1252383 F.W. Barnes and G.F. Phillips, Assigned to E.K. Co. 255  
A Photographic Dark Room Lamp having a vertical filter window, opposite to which there is a reflecting surface for throwing a large volume of light into the room for general illumination. On the button of the lamp and out of line of the rays from the reflector there is a small filter window adapted to transmit a relatively dim light to a developing bench. Both filter windows are removable, the smaller one by means of a modified bayonet point.
- 1250354 J. A. Ricketts 2623  
A Photographic Between-the-Lens Shutter of the set type. It is provided with a system of rotating blades driven through pinions and a toothed ring from a motor spring. The retarding mechanism includes a set of gears which drive a metallic disc between the poles of a magnet, which may be either a permanent one or an electro-magnet.
- 1250628 G. Y. Nishiyama 2626  
An Automatic Release for Camera Shutters which enables the operator to include himself in the picture. A signal bell is included which warns the operator that the shutter is about to go off.
- 1253144 C. C. Carpenter 264  
A Finder for Photographic Cameras. It comprises a metal trough detachably supported longitudinally on the side of the camera during transportation, but located transversely thereof when in use.
- 1251766 H. Gindele 2653  
A Method of Preparing Photographic Film Cartridges. The method enables the photographer to remove exposed sections of film without impairing the unexposed portions of the cartridge. The film is provided with cuts to permit the various sections to be readily torn out and adhesive strips are used to attach to the backing paper the loose film ends made by the removal of a section.
- 1249713 J. Blyth, Assigned to E. K. Co. 283  
A Foldable Mount for Photographs made from a single sheet of material and having integral corner retaining extensions located beneath the side flap of the mounts when the latter are folded.
- 1250074 F. A. Apfelbaum 283  
A Lantern Slide Mat in one side of which the title of the slide is stenciled.
- 1250820 G. E. Dyer and S. R. Lean 3205  
A Casing for the Condensing Lenses of Motion Picture Projectors. It includes a lower semi-cylindrical support provided with grooves in which the lenses rest loosely, so that they can unrestrictedly expand and contract. The upper part of the casing is rectangular and is out of contact with the lenses.

1250724 J. L. and I. J. Ulmer 3209

An Automatic Fire Shutter for Motion Picture Projectors. When the film breaks or becomes slack, a weighted door swings up to cut off the light and at the same time opens a switch in the electric circuit.

1251161 A. Wright 322 067

A Motion Picture Projection System in which the usual intervals of darkness on the screen are avoided by projecting slightly out-of-focus pictures through an auxiliary projector during such intervals. These out-of-focus pictures are preferably the same ones that have just been exhibited in the main projector. In other words, motion pictures are projected from a given sequence of pictures and a picture with an impaired definition like one in the sequence, but out of its order, is projected for a smaller length of time in the interval of obscurity between the successive pictures of the sequence.

1252321 D. F. Comstock, Assigned to Technicolor Motion Picture Corporation 322

A Motion Picture Projector in which the film is moved continuously while the picture is held stationary on the screen by means of a compensating optical system, which includes a set of right angle prisms carried on the periphery of a rotating drum.

1251287 H.W. Rogers, Assigned to R.& E. Singing Picture Co. 323 069

Synchronizing Mechanism for Motion-Picture and Sound-Reproducing Means. The stopping and starting of the sound reproducer is controlled electro-magnetically from the film which carries metal contacts at intervals that close the operating circuits.

1252304 D. O. Royster 323 069

A Combined Motion Picture Apparatus and Phonograph. The latter includes a pair of record cylinders arranged side by side and a sound reproducer which shifts from one cylinder to the next. A telephone transmitter is connected with the reproducer and connects with a telephone receiver located adjacent the motion picture screen.

1251961 F. Butterworth 324

A Screen for Motion Picture Projection comprising a reflector of wood pulp and granulated glass spread upon a fabric backing.

1252042 M. Segel, Assigned to E. Mehlfelder Ubelmessenger 328

A Motion Picture Projector provided with an apparatus which automatically inserts advertisements in displaying position when the film runs out.

1252599 M. F. MacDonald 351

An Apparatus for Developing Motion Picture Films. It comprises an apron made up of plates linked together and provided near their margins with protuberances for spacing the film when the latter and the apron are coiled up.

1250364 A. R. Selden 361

An Operating Device for Motion Picture Cameras. The camera is mounted upon a single leg and is aimed at the object by an operator who uses both hands for that purpose only. The driving of the camera is done through a flexible shaft connected with a crank operated head carried on a separate tripod and operated by an assistant.

## British Patents

110993

E. H. Tarlton K/33

**Two-Color Screen.** To one side of a sheet of glass or celluloid is applied a layer of red particles spread in such a manner that interstices are left of approximately the same area as the particles. This is protected with varnish and coated with an emulsion sensitive to blue and green only, which is exposed through the back so that a black deposit is formed behind the interstices, no action occurring behind the red particles. After fixation, the silver deposit behind the interstices is toned blue-green, thus producing a two-color screen, the units consisting of the particles and the toned silver.

110964

W. H. Kunz K/34

**Color Photography.** Multicolored photographs are produced by making separate color record negatives and printing from them simultaneously onto a screen-plate or film. In one form of printing apparatus light from a suitable source passes through the negatives and color filters to three lenses. The images produced are united on the screen film by means of a totally reflecting mirror and two transparent mirrors. Two glass blocks and a glass plate are provided to render the light paths optically equal and black screens absorb the rays which would otherwise produce undesired images on the film. An inclined transparent mirror reflects some of the united rays upwards to an eyepiece so that the registration, etc., may be observed. In a modified form of apparatus the three lenses are replaced by one lens in the path of the united rays.

111136

W. C. Jeapes 353

**Developing Cine Film.** The film is passed through the baths or drying chambers in loops which are weighted at their free ends to take up expansion of the film due to wetting. In order to obtain a long travel in a tank the film may pass from one roller down into a loop up to another roller side by side with the first and on the same shaft and so on to the width of the tank. The weight carried by each loop is preferably a roller which can rotate freely as the film travels, having guide flanges to keep it in place. A full description of the apparatus is given in B. J., 1918, p. 32.

Monthly  
**ABSTRACT**  
Bulletin



April, 1918

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**EASTMAN KODAK COMPANY**  
Rochester, New York



# Monthly Abstract Bulletin

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April, 1918



*W. F. Oliver,  
Reprint*

## Errata

In the *Abstract Bulletin* for March, 1918,

Page 41, line 50, instead of: *and Evaporation and Drying* read: *of Evaporation and Drying*.

Page 48, Patent 111136 should be: 111156.

## Photography

### Preparation of a Bleach-out Paper

A. D. A138

(Translated from the Jour. Suisse de Phot.)

Corriere Fotografico, 1918, p. 3193

The author states that a bleach-out paper can be prepared by coating a gelatine-coated paper with collodion containing the necessary dyestuffs, the dyes recommended being a mixture of Methylene Blue, Auramine, Thioflavine, Pyronine G and Curcumine. A formula is given for the preparation of the dyed collodion, which is sensitized with Anethol.

### Developer Poisoning

C. M. Foster G

B. J., 1918, p. 71

A correspondent gives a prescription for an ointment to cure hands poisoned by developing agents.

### Developer Poisoning

J. Dunning G

B. J., 1918, p. 82

A letter on the prevention and treatment of metal poisoning.

### Chemical Poisoning

G

Studio Light, Feb., 1918, p. 16

Chemical poisoning is secondary to the action of the alkali in the developer on the skin. The alkali softens the outer skin and causes cracks to form. This exposes the under layers of skin to attack by the developing agent and its oxidation products. Cracking of the skin is also caused by chemicals drying to a powdery form on the skin, so that when developing, the hands should be frequently rinsed in water to prevent at any time the crystallization of the solution on the hands. Before drying, wash the hands in a weak acid solution and rinse for one or two minutes in plain water. A little vaseline or oily ointment rubbed into the hands, or the use of rubber gloves, will prevent the access of the solutions to the skin. A method of treatment of poisoned hands is suggested.

### Air Bells in Tank Development

Eagle Tank Company

G4-041

B. J., 1918, p. 58

A common cause of air bells is stated to be bubbles on the surface of the solution before putting the rack of plates into the tank. The plates carry the bells down on their surface.

### The Hypo Scarcity

G6

B. J., 1918, p. 63

The article is written to suggest how the most economical use can be made of the fixing bath in view of the present shortage of hypo in Great Britain.

### Degrees of Permanence in Photographic Prints

J

B. J., 1918, p. 74

Discussion of the general purpose of permanence.

- Gaslight Printing from Amateur Negatives D. Charles J3-241  
B. J., 1918, p. 42

Describes a printing box for printing amateurs' negatives, and also gives a number of suggestions as to the development and handling of the prints.

- The Douglass Process of Color Cinematography A. S. Cory K/24  
Mot. Pict. News, March 2, 1918, p. 1333

A process analogous to Kinemacolor excepting that the rotating filters in the projector are eliminated, alternate pictures of the positive film being stained red and green as in the Technicolor process.

- Decennia Practica—Color Photography K/33  
B. J. Color Supplement, 1918, p. 6

Extra-Sensitizing Autochrome Plates. Methods of treating Autochrome plates with the isocyanin sensitizers in order to shorten the exposure.

- Reclaiming Hypo P5-G6  
B. J., 1918, p. 74

In an editorial note some attempts at reclaiming hypo by precipitating silver with various metals are described—aluminum, zinc, copper and mercury. All the experiments were unsuccessful in that the amount of active hypo present did not appear to be altered in any way by the treatment. Incidentally, it was shown that zinc and aluminum are most unsuitable metals for use with hypo since they are rapidly attacked, hydrogen sulphide being liberated.

- Covering Power of Lenses and Stray Light in G. M. Nichol 019  
the Camera  
B. J., 1918, p. 41

The author points out that the use of a lens of wider angle than is required for the plate used involves stray light in the camera which may produce veil or flatness in the negatives.

- Scientific Design in Optical Projection—Part I. J. A. Orange 019-067  
B. J., 1918, p. 51

This is a paper read before the New York Society of Illuminating Engineers and contains a great deal of valuable information on the design of optical projection systems. It discusses the subject from the point of view of illumination on the screen, and the light source necessary to obtain a given result.

- Scientific Design in Optical Projection—Part II. J. A. Orange 019-067  
B. J., 1918, p. 65

This deals with motion picture projectors with regard to the necessary conditions as regards the diameter and position of the condenser in relation to the film and the light.

- Scientific Design in Optical J. A. Orange 019-067  
Projection—Part III.  
B. J., 1918, p. 78

The last section of Mr. Orange's paper on this subject. This deals chiefly with the cine shutter in relation to the film and discusses the advantages and disadvantages of alternative positions.

- Covering Power and Illuminating Power of Lenses C. W. Piper 019

B. J., 1918, p. 76

General discussion of the question of illumination and covering power in lenses.

- American Copyright in Great Britain and British Copyright in the United States 0335

B. J., 1918, pp. 39, 49, 53, 59

- The Use of Compensating Filters in Cinematography A. S. Cory 0631-0561

Mot. Pict. News, Feb., 1918, p. 1201

An article pointing out the advantages of using color filters and orthochromatic film for straight black and white cinematography. The importance of focusing with the filter in position is explained.

- Withdrawal of Dry Plate Brands 11

Studio Light, Feb., 1918, p. 12

The manufacture of the following kinds of plates has been discontinued owing to the fact that other brands will answer as well or even better for the special work for which they have been used: Seed 27 Gilt Edge, Seed C Ortho, Seed Non-Halation, Eastman Extra Rapid, Standard Thermic, Standard Panchromatic, Standard Slow Ortho, Standard Imperial, Standard Extra.

- Satista Printing Paper 1315 /75

B. J., 1918, p. 56

Mr. W. H. Smith of the Platinotype Company gave a demonstration on Satista printing paper at the Croydon Camera Club, showing how the combination of a platinum and silver salt could be used with ferric oxalate to make a satisfactory paper.

- Eastman Commercial Ortho Film 1213

Studio Light, Feb., 1918, p. 20

The film is similar to the Eastman Commercial film but has orthochromatic qualities.

- Modern Photographic Developers 1531-163

Phot. Min., Jan., 1918, No. 167

A practical handbook to the new developers; telling what they are and how to use them; with reliable formulæ.

- Some Needed Reforms in Commercial Enlarging Lanterns 222

B. J., 1918, p. 86

It is recommended that the wooden enlarging lanterns, at present common in England, be replaced with metal lanterns. Focusing should be done by moving the negative, condenser and light, and not by moving the lens, thus enabling tables of conjugate foci to be used. Negative holders should be arranged so that any part of a large negative may be brought opposite to the center of the condenser. It is important that sufficient length of bellows should be fitted so that the lantern can be used for reducing.

**A Novel Motion Picture Camera**

317

Mov. Pict. World, March, 1918, p. 1220

A motion picture camera invented by G. B. ttini, by which the various picture units are taken on a glass 5" wide, instead of on the usual continuous film band. Each picture is one-quarter inch square and may be projected for any length of time owing to the non-inflammable nature of the glass.

**German Photographic Industry in 1917**

B. J., 1918, p. 79

During the first two years of the war, it seemed as if the manufacture of cameras would be classed as a luxury industry and would be in difficulties, but with the use of photography for the army, the demands on the industry became such that the labor left was unable to cope with them and leave was granted from the army to skilled workers. As a consequence of the military demands the output for private requirements is insufficient and there is a shortage of cameras on the market. Photographic plate and paper factories are also working at high pressure and trade orders are executed only slowly and in small quantities, but there is at present no marked scarcity as the dealers had good stocks.

**Photo-Engraving****Deaths from Nitric Acid Fumes**

1511

B. J., Feb. 8, 1918, p. 70

In an English Process establishment a carboy of nitric acid cracked; the two workmen who took steps to avoid the spread of the liquid, although at first feeling no ill effects, shortly became ill and subsequently died.

**Indictment against New York Engravers Dismissed**

Amer. Printer, March 5, 1918, p. 57

The indictment against the New York Engravers for violation of the Donnelly anti-trust law has been dismissed, on the ground that a photo-engraving cannot be classed as a commodity within the meaning of the Act.

**Photogravure in America**

S. H. Horgan

Inland Printer, March, 1918, p. 763

Two notes pointing out that hand-printed photogravure was introduced to America in 1882 and machine-printed rotary gravure about 1907.

**To make Large Tray for Acetic Acid**

S. H. Horgan

Inland Printer, March, 1918, p. 763

Gives directions for the use of wood, Owl or Probus acid proof varnish cement, and unbleached muslin, and states such a tray properly made will last for years.

**Copyright Complications**

S. H. Horgan

Inland Printer, March, 1918, p. 763

Photoengravers must not make an engraving from an uncopyrighted reproduction of a copyrighted picture.

**Etching Aluminum**

S. H. Horgan

Inland Printer, March, 1918, p. 763

All etching of Aluminum is troublesome, the best solution so far found is iron chloride acidified with Hydrochloric acid in proportion of 1 part to 20 parts iron chloride.

**Physics****Color Symposium—In six parts.**

Trans. I. E. S., Feb., 1918, p. 11

Part I—The Potentiality of Color in Lighting.

M. Luckiesh

Part II—Color From the Physical Point of View.

H. C. Richards

Part III—Color in Illumination.

Beatrice Irwin

Part IV—The Psychology of Color, in Relation to Illumination.

L. T. Troland

Part V—The Work of the National Bureau of Standards on the Establishment of Color Standards and Methods of Color Specification.

I. G. Priest

Part VI—Some Experiments on the Eye with Different Illuminants. Part I.

C. E. Ferree and G. Rand

**Newton and the Color of the Spectrum**

R. A. Houstoun

Science Progress, Oct., 1917, p. 250

A review of Newton's researches on the spectrum and spectral colors. Why Newton missed seeing the solar absorption lines and why he missed the true phenomena of dispersion are treated at some length.

**The Radius of the Electron**

J. W. Nicholson

Proc. Phys. Soc., Dec. 15, 1917, p. 1

The assumption of an electron with a bounding surface leads to difficulties, especially in dealing with the atomic nucleus, which are avoided by assuming the electron to be the center of an ether strain, the strain diminishing according to an exponential law.

**Photography of the Solar Spectrum from 6800 A. to 9600 A.**

W. F. Meggers

Astrophys. J., Jan., 1918, p. 1

After giving a brief historical review of the photography of the infra-red spectrum, the author describes a method of using ordinary rapid plates, bathed in dicyanin, for use in obtaining photographs to wave-length 9600 A. He claims greater convenience and efficiency for this method.

**Triple Cemented Telescope Objectives**

T. Smith and A. B. Dale

Proc. Phys. Soc., Dec. 15, 1917, p. 21

This paper describes the four series of triple cemented thin telescope objectives which can be made from two kinds of glass, and determines their construction when first order spherical aberration and coma are eliminated.

**Multiple Thin Objectives**

T. Smith

Proc. Phys. Soc., Dec. 15, 1917, p. 31

A continuation of the preceding paper, in which a general method is developed of treating any number of components. Only first order spherical aberration and coma are considered.

**An Optical Ammeter**

P. D. Foote

J. Wash. Acad. Sci., Feb., 1918, p. 77

The author describes two forms of current measuring instrument, one which is strictly a hot wire ammeter with the hot wire at a temperature between 600° and 1500°C and the other a device for adjusting a current, by optical methods alone, to any preassigned value.

**General and Inorganic Chemistry****Some General Aspects of Evaporation and Drying**

H. K. Moore

Met. Chem. Eng., Feb., 1918, p. 186

A continuation of the previous article. (See this *Bulletin*, 1918, p. 41.) Treats of phenomena in an evaporator tube; calculation of temperature differences; types of multiple effect evaporators; forward-flow and backward-flow; temperature differences; pressure differences; heat of combination with water; temperature difference of exchange; drip from evaporator. Tables and charts are given.

**Ultra-violet Energy and Its Use**

M. Luckiesh

Met. Chem. Eng., 1918, p. 231

A general review of the subject.

**Organic Chemistry****How Coated Papers are Made. Some Details of the Coating Process and the Materials Employed**

R.B. Foulis

1412

Paper, Feb. 6, 1918, p. 14

A general description.

**Determining the Absorbency of Paper. A Review of Tests, Methods, Apparatus and Results with Blotting Paper**

E.O. Reid

1412

Paper, Jan. 16, 1918, p. 14

The 1 cc. time absorption method with standard ink is recommended. The formula for the U. S. Government Standard Blue-black writing ink is given. Also tables and results.

**Important Dates in the History of Paper. Chronological**

1412

Table forming a Contribution toward the History of Papermaking

Paper, Jan. 30, 1918, p. 15

- Blue and Brown Print F.P. Veitch, C.F. Sammet and E.O. Reid 1412  
Paper; Characteristic Tests and Specifications  
J. Ind. Eng. Chem., 1918, p. 222

Results of physical tests and specifications are given. Physical tests are made at 70° F and 65% relative humidity. Wet tests are made after immersing the paper in water at 70° F for 20 minutes. For papers for permanent records only the best quality rag stock is recommended. Brown print papers should not be used for permanent records as the coating seriously injures the fibres. Most blue print coatings are not injurious to the paper if properly applied and protected from light, heat and moisture. To insure strength and durability, all coating, printing and drying should be done at the lowest possible temperature.

### Intensive Toluol Production II

- Proposed Improvements in the Concentrating and Refining Process F. E. Lichtenthaler  
Met. Chem. Eng., 1918, p. 195  
(See this *Bulletin*, 1918, p. 41.)

## From Eastman Kodak Research Laboratory

- The Nature of a Developer Sludge J. I. Crabtree G1-163  
Communication No. 62

A sample of a sludge taken from a deep tank pyro developer compounded with sodium bisulphite was found to consist mainly of fine needle shaped crystals of calcium sulfite corresponding to the formula  $\text{CaSO}_3 \cdot 2\text{H}_2\text{O}$ .

In order to explain the presence of the calcium salt, it was at first assumed that some compound of calcium had been accidentally added to the developer, or that some of the ingredients contained calcium as impurity, but as only pure chemicals were employed it was concluded that the calcium must have been originally present in the water used for compounding the developer.

On adding definite amounts of calcium in form of chloride or sulphate to water used for mixing the developer, it was found that the presence of .025% dry calcium chloride was sufficient to ensure the formation of crystals of calcium sulfite, if the solution containing the sulphite and bisulfite was allowed to stand before adding the carbonate.

Calcium sulfite is soluble in an excess of sodium bisulfite forming calcium bisulfite, but on allowing this solution to stand in the air, needle shaped crystals of  $\text{CaSO}_3 \cdot 2\text{H}_2\text{O}$  are deposited. The absence of magnesium from the sludge in question was due to the relative high solubility of magnesium sulfite and magnesium carbonate in a solution of sodium carbonate.

Although a number of trials were made by compounding the complete developer with water containing calcium salts, in no case were needle shaped crystals deposited on standing, only a semi-amorphous sludge being precipitated. It was considered that the needles could only have crystallized within the complete developer if it were mixed very warm.

The presence of a sludge such as the above in a developer is harmless if allowed to settle, though the developer is robbed of sulfite to the amount required to form the sludge. If the developer is agitated, the sludge is apt to cause trouble by settling on the emulsion of the plates or films. It may be removed by filtering.

In case the calcium is present as bicarbonate, thus causing temporary hardness of the water, the formation of the sludge may be prevented by boiling the water and allowing to cool previous to compounding the developer. If the calcium is present as chloride or sulphate, in which case the water is permanently hard, this may be removed by precipitating with sodium or potassium oxalate or sodium carbonate. The oxalate treatment will also remove temporary hardness.

Tests showed that the oxalate had no effect on the fogging power of the developer when present even to the extent of 1%, so that a little excess of oxalate during precipitation will do no harm.

The Spectral Selectivity of                      L. A. Jones and R. B. Wilsey      015  
Photographic Deposits

J. Frank. Inst., Feb., 1918, p. 231

Communication No. 57

The paper is introductory to work on tone reproduction and deals with the theory, nomenclature and methods for determining the photographic transmission of silver deposits, with a view to determining the influence exerted by the color of a negative on the quality of the resulting prints.

The Visibility of Radiation                      Prentice Reeves

Trans. I. E. S., Feb., 1918, p. 101

Communication No. 55

This experiment was performed to obtain more data on the subject by using a method similar to that used by Ives and Nutting. The values for the spectral energy distribution of acetylene were those offered by Nutting and two values offered by Coblentz. The data obtained by using the different acetylene energy values enable one to compare results with the other experiments as well as to show the effect of using the values with the same data.

The apparatus used was a modification of the Nutting monochromatic colorimeter. The light from a standard acetylene burner passes through a pair of nicol prisms and a collimating lens to a constant deviation dispersing prism which is operated by a screw carrying a direct reading wave length drum and then to the observer's eye. By means of a Whitman disk the light from a gas filled tungsten lamp which passes through a daylight filter, is intermittently mixed with the monochromatic light and a flicker balance is made by varying the intensity of the colored light. With both light sources constant and three independent series taken on different days it is safe to assume that the resultant average for each of the thirteen observers is representative.

Five of the observers in the experiment were also observers in Nutting's experiment and the results from these five observers have been treated separately. For these observers the average maximum visibility found by the writer is .555 $\mu$  and by Nutting .554 $\mu$ . The average of the thirteen observers shows a maximum at .553 $\mu$  in agreement with Ives as against .555 $\mu$  from Nutting's results.

## Patent Abstracts

## U. S. Patents

1254579

M. W. Collet F6

A Device for shading parts of the photographic image to equalize the lighting. Plates bearing suitable marks are placed within the camera at a substantial distance back of the lens, but not far enough to form distinct images of the shading marks upon the plate.

1253138 P. D. Brewster, Assigned to Brewster Film Corporation K2116

A Light-Splitting Mirror for Two-Color Photography provided with a set of light transmitting apertures, the walls of which are inclined and blackened to minimize undesirable reflections.

1253796

L. F. Douglass K3117

A Two-Color Motion Picture Camera in which a pair of 90° prisms placed face to face and suitably inclined split the light into transmitted and reflected rays by utilizing the principle of total internal reflection. The film which receives the images corresponding to one color sensation moves through a horizontal gate near the upper prism, while the film which receives the images corresponding to the complementary sensation passes through a vertical gate adjacent the lower prism.

1255421 F. W. Hochstetter and E. H. Pryce K32 K/24  
Assigned to H. P. Patents and Processes Co. Inc.

Motion Picture Apparatus for use in Two-Color Additive Work. A frame carrying red and green films is reciprocated in properly timed relation in front of the film gate.

1253883

D. W. Player K/24 322

A Multi-Color Motion Picture Apparatus, the principle of which may be used either in a camera or projector. The different color sensation pictures are taken upon the same negative film in alternate series at different film gates. By means of rotating inclined mirrors and suitably timed feeding mechanism the portion of the film at one gate is held stationary while an image is being projected thereon and the section of the film at the other gate is advanced a step during such interval.

1256981

J. H. Christensen K/44

A Method for Producing Colored Prints. A dyed gelatine layer is coated with a collodio-silver-bromide film, which is made porous by glycerin. A print on this is made from a negative, it being developed and washed in the usual way, but not fixed. It is then treated with a diluted alkali sulfide solution containing an excess of sulfur which reacts with the undeveloped silver bromide in the collodion film and plugs up the pores or such film in proportion to the amount of such bromide. The dye from the gelatine image can then pass through the collodion film to make a colored print only in proportion to the original silver image.

1254751

C. N. Wendelgass M07

An etching machine of the type that raises the plate in and out of the etching fluid.

1255514

F. Cowan M07

A portable holdfast for shading films used in lithography and photengraving with which most delicate adjustments may be made.

1253285 W. N. Selig, Assigned to the Selig Polyscope Co. 0631 319

An Attachment for a Motion Picture Camera designed to photograph subjects at relatively long intervals with the object of exhibiting the pictures later at the usual rate. Thus the opening of a flower or the rising of the sun can be readily shown. An ordinary automatic photographic shutter is placed in front of the lens while the customary sector shutter is removed. Suitable gearing connected with the film-feed trips the shutter at regular intervals. A motor may be used to drive the apparatus at the desired slow speed.

1252965 H. B. Stocks 069 323

An Apparatus for Photographically Recording Sounds upon a Moving Strip of Film, the resulting record being used in an electromagnetic reproducer of the selenium cell type. For the making of the record a mercury vapor lamp is used, the intensity of which is varied in accordance with the electrical oscillations from a telephone transmitter, an electromagnetically operated shutter varying the light to the film in correspondence to the variations in the light from the lamp.

1254487 C. W. Ebeling 069 323

A System for Synchronizing Motion Picture and Sound Reproducing Apparatus. The speed of the sound reproducing device is electromagnetically controlled from the film, the latter being formed at intervals with apertures through which the full force of the projecting light can periodically flash onto a selenium cell in the control circuit.

1253990 L. LeCue, Assigned one-fifth each to F. L. Harwood, 07004  
R. W. Albertson, J. H. Gilson and Nelson M. Whipple

A Drier for Sensitized Plates. The plates are placed upon a table which whirls above a gas-heated sand bath and beneath a screen which permits ventilation, but eliminates dust.

1256886 E. Eberhard 07332

Mechanism for automatically progressively opening and closing the iris diaphragm in making screen negatives for half-tone photoengravings.

1255288 A. D. Brixey 1212 3209

1255338 C. B. Rearick, Assigned to A. Brixey

A Motion Picture Film, especially of the safety variety, provided with staggered perforations along one edge, although spaced the same distance as those along the other edge. Such film can be used either on a standard projector or on a safety projector provided with a special sprocket in schools or churches. Standard film on the other hand can be used only with a standard projector and could not be employed on the safety projectors.

1249726 A. de Salas 1411

Process of preparing flock-cotton for explosives. The rag or cotton waste is de-greased by boiling with an alkaline or ammoniacal solution containing, when grease is present (as in machinists' waste), a small proportion of aniline.

1249511 S. Saxe 1511

Manufacture of Lactic Acid by fermentation of vegetable ivory waste.

1255508 T. J. Brewster 163

A Photographic Developer alleged to be specially useful in connection with over-exposures and exposures on subjects of great contrast. It comprises:

Paraphenylenediamin	-	-	-	-	10 parts
Sodium Sulfite	-	-	-	-	10 "
Sodium Nitrite (as a catalyzer)	-	-	-	-	10 "
Sodium Carbonate	-	-	-	-	2 "
and water.					

1253078 H. G. Mordaunt 2152

A Winding Device for Roll Film Cameras driven by a spring motor, there being a simple form of clutch between the motor and the winding shaft. No provision is made for the increasing diameter of the film on the winding roll.

1253205 P. Brauner and L. W. Rosen, Assigned to A.E. Brion 2152

A Roll Film Camera provided with a film-winding mechanism driven from a spring motor and released after each actuation of the shutter for the winding up of a fresh section of film. Sets of small corrugated rollers engage the edges of the film and draw it forwardly a correct amount at each cycle of operation. An escapement prevents a too rapid action of the winding motor.

1253321 O. H. Wilber, Jr. 2152

A Roll Film Camera provided with a device for preventing double exposure. The shutter lever is automatically locked after each actuation until a fresh section of film is wound into position, the winding of the film automatically releasing the shutter lever. The connection between the shutter and the winding mechanism includes a flexible cable.

1254373 G. E. Stansell 2152

A Roll Film Camera provided with a spring motor for winding the film, said motor being released automatically after each actuation of the shutter to bring a fresh area of film into position in the camera. A special perforated tape is connected with the winding mechanism to stop the movement of the latter when a correctly measured amount of film has been wound up.

1251503 E. J. Hunt 2152

An Electromagnetic Device for preventing double exposure. The shutter lever is locked after each actuation, but is electromagnetically released when a fresh section of film is wound into place. The circuit to the unlocking apparatus is completed by means of small tinfoil strips spaced at suitable intervals along the edge of the film. The batteries are of special shape so as to fit into the bottom of the film chambers.

1254590 W. F. Congaware 2153

A Device for Light Printing titles or other inscriptions upon a film in a camera simultaneously with the normal exposure of the film through the regular lens. The inscription is written upon a translucent strip formed with a flange. The strip slides through a light-trapped opening into the camera where it is guided in front of the film by the flange.

- 1256769 H. F. Blackwell, Assigned  $\frac{1}{2}$  to M. E. Jutte 2153  
 $\frac{1}{2}$  to M. A. Blackwell

A Roll Film Camera provided with means for locally light printing inscriptions on the film. A coiled translucent strip is drawn out of the camera and an inscription made thereon. A spring then draws it into the camera with the inscription adjacent the sensitive face of the film. A door in the side of the camera is next opened to allow light to pass through a deflecting prism onto the inscription to print the latter onto the film. The opening of the door automatically moves the prism so as to press the inscription-bearing strip against the film.

- 1256784 A. J. Gaisman, Assigned to E. K. Co. 2153

Roll film provided with means for light printing inscriptions thereon at desired points by localized exposure. Between the partially translucent backing paper and the sensitive film there is located a displaceable substance, such as carbon transfer material, this layer being covered on the side next to the film with a protective coating such as wax or varnish.

- 1256774 L. J. E. Colardeau and J. Richard 218

A Small Stereoscopic Film Camera using rolls of perforated motion picture film provided with suitable opaque lead strips. The mechanism automatically clamps the film every time that a correct amount is wound up, such amount being indicated on dial. Since the pictures of each stereoscopic pair are considerably separated along the film strip, the pictures are arranged in alternating order, the first pair on the first and fourth picture spaces; the next pair on the third and sixth; the next on the fifth and eighth, and so on.

- 1253220 H. Dumars 221

An advertising Displaying Machine which can be quickly adapted to exhibit either transparent films or opaque films, a projecting system of the reflecting type being substituted for the regular projecting system in case the opaque films are used. The film, in the form of an endless band, runs between feed sprockets and over a considerable number of loop forming sprockets to provide for an adequate length of film.

- 1254724 W. L. Patterson, Assigned to Bausch & Lomb Optical Co. 221

A Dissolving View Projection Apparatus embodying improvements in a pair of bellows and the mounting of the lights.

- 1253813 R. D. Gray 2233

A Concave Reflecting "Condenser" for Enlarging Apparatus in which the intermediate zones are provided with sections of diminished reflecting power to equalize the lighting upon the negative.

- 1254746 H. J. Troxell 2235

An Advertising Projector in which a series of slides are arranged upon an intermittently rotated disc which brings them successively in front of the condenser, a shutter cutting off the light during the change from one picture to the next.

- 1257278 T. E. Brown 2235

A Machine for Automatically Displaying Lantern Slides. The latter are arranged on carriers in a magazine at the top of the apparatus and drop successively from the front of the magazine into the displaying position. From the displaying position each slide is carried by an inclined chain to the rear of the magazine.

- 1254054 R. Scholze 241  
A Post Card Printing Apparatus comprising a lamp box carrying an inclined printing frame beneath which is a pivoted shutter actuated by a push rod projecting through a hole in the wall of the box.
- 1256893 H. Gindele 252  
A Developing Tank for plates or cut film which is provided with light-trapped passages for entrance and exit of the developer. It is made of a number of interlocking metal parts.
- 1254300 H. J. Baker 253  
A Machine for automatically developing, fixing and washing batches of photographic plates. A suitably timed driving mechanism lowers a rack of plates into the developing bath, lifts them out and lowers them into the first washing bath, lifts them out and then immerses them into a fixing bath, and finally lowers them into a washing tank when the driving mechanism automatically stops.
- 1256290 H. L. Blondes 253  
A Machine for automatically developing, fixing and drying strips of photographic prints. Such strips are provided at their ends with a special leader rod which through the agency of star wheels and endless belts pulls the strip through the baths and drying apparatus.
- 1256247 R. Newman 2512  
A Film Pack Developing Tank designed to be placed at the rear of a camera so that as the tabs are pulled out successively, they will draw the films into skeleton holding frames in the tank. When all of the films are thus suitably spaced in the tank, the film entrance is closed by a slide and the developer poured in through a light-trapped opening.
- 1250618 W. H. Morgan 258  
A Print Drier comprising a pair of heated drums over which the prints are carried by means of a cooperating pair of endless belts, the latter being held in place by a rocking tensioning frame carrying rollers which press against the belts between the drums.
- 1255915 P. Mueller 258  
A Print Drying Apparatus consisting of a metallic tent-shaped cupboard with a gas-jet therein.
- 1254013 H. Van Hoesenberg 2626  
An Electromagnetic Device for releasing camera shutters from a distance.
- 1254931 B. L. Parker 2626  
A Spring Operated Device for automatically actuating a camera shutter, the device being released electromagnetically from a distance.
- 1255901 P. J. Marks, Assigned to E. K. Co. 2626  
An Automatic Shutter Release which enables the operator to include himself in the picture. It includes a spring-pressed plunger for operating the cable release, the movement of said plunger being adjustably retarded pneumatically.

1255868 W. F. Folmer, Assigned to E. K. Co. 2652

A Magazine Back for Plate Cameras of the type in which the plates are locked in septums which are carried from a storage chamber into an exposing chamber by means of catches carried by the slide of the magazine. Each time that the slide is pushed in to shift a plate it strikes a plunger which registers the number of such plate on an indicator and when all of the plates have been exposed the slide is automatically locked to prevent double exposure.

1255017 J. G. Jones, Assigned to E. K. Co. 2653

A Photographic Film Cartridge provided with a specially folded coupling strip between the backing paper and the leader, whereby the strain of winding in the camera will be taken up by the film itself, thus drawing it taut and flat. The fold in the coupling strip is covered by a shield which prevents it from catching in the camera.

1255167 J. P. Howie 2682

An Exposure Meter attached to a camera finder. It comprises a rotary disc provided with openings which are adapted to be successively brought in front of the finder lens. Each opening is provided with a light retarding means and a legend indicating the time of exposure.

1256760 R. L. Woods 275

A Retouching Device in which the pencil is rapidly vibrated vertically by an electromagnetic apparatus.

1256931 H. C. Schlicker 315

An Amateur Motion Picture Camera in which the series of pictures are taken helically upon a wide endless band. The camera may be driven by a spring motor which moves the lens laterally and advances the film band step by step.

1254239 F. E. Keolla 317

A Motion Picture Apparatus of the type in which a disc is used with a spiral series of pictures thereon.

1254552 M. J. Vinik 3201

A Motion Picture Apparatus in which the film is rapidly shifted between stationary intervals by means of a pair of coaxial sprockets which carry the film in a cylindrical curve through the gate. To compensate for this film curvature a cylindrical lens is placed just in front of the gate.

1256613 F. L. Terwilliger, Assigned  $\frac{1}{2}$  to T. G. McHattan 3202

A Motion Picture Projecting Machine in which a curved resilient frame holds the film at the gate in a cylindrical bend with the object of maintaining it in proper focus.

1255344 M. Segel 3205

A Condenser Apparatus for Motion Picture Projectors. A plurality of sets of condensers are mounted in a latterly shiftable casing so that when one of them becomes broken a new one can be immediately slid into place.

1253372 C. J. Gotti, Assigned  $\frac{1}{2}$  to S. Fasanello 3208  
 $\frac{1}{2}$  to W. F. Peck

A Motion Picture Projection Apparatus in which the projected films are wound onto special intermediate reels and finally are rewound onto the original reels, thereby avoiding the necessity of providing and transporting the usual double sets of reels.

- 1254272 S. Ponon, Assigned to Daylight Cinema Corporation of New York 3208

An Endless Reel for Motion Picture Film so constructed that the latter is unwound from the core of the reel and simultaneously rewound on its periphery. A spring-pressed axially shiftable conical hub permits the discharge of the film from the inner convolution.

- 1255044 I. F. Peck 3209

Motion Picture Apparatus in which an electromagnetic mechanism automatically clamps the film when the latter breaks. The clamp is so constructed as to prevent the spread of fire.

- 1255336 N. Power, Assigned to Nicholas Power Co. 3209

An Enclosed Motion Picture Projector in which the doors to the magazines and the central casing are all connected so as to simultaneously open, close and be fastened by a single lock. A safety fire shutter is only opened to permit projection when the lock is in position.

- 1254436 H. W. Rogers 323

A Synchronized Motion Picture and Sound Reproducing Apparatus in which the latter is electromagnetically controlled from the film. The film is provided at suitable intervals with special perforations and the feed sprockets therefore are provided with radial plungers which slip outwardly through such special perforations in the film and actuate an electric switch.

- 1254684 E. L. Greensfelder 323

An Apparatus for Synchronizing Motion Pictures and Sound Reproducers. The latter are controlled from the film, which is provided with special perforations, permitting strong flashes of light to fall upon selenium cells and thus actuate the electromagnetic synchronizing apparatus. The sound reproducer may be a piano or devices for firing a gun, blowing a whistle, ringing a bell, etc.

- 1255822 H. W. Rogers 323

Mechanism for Controlling Sound Reproducers from Motion Picture Projectors. The film is provided with buttons, which through an electromagnetic system, cause the sound reproducers to be connected or disconnected from the main power shaft. This allows the titles of songs to be flashed upon the screen without putting the sound reproducer out of phase with the film.

- 1255823 H. W. Rogers 323

Apparatus for Synchronizing Motion Picture Projectors and Sound Reproducers. The latter are driven from the former through clutches which are electromagnetically controlled from the film.

- 1256147 L. McCormick 324

An Apparatus for flashing lights behind a motion picture screen in timed relation to the picture exhibited by the film. The film at suitable intervals carries metallic rivets which close an electric circuit relayed to the lighting circuit. Thus an added twinkle may be imparted to a lighthouse scene or increased illumination to a moon picture.

1256604 M. H. Spear 329

A Mutoscope of the book-leaf type, the pictures being arranged in a helical series projecting radially from a rotary drum.

1254911 A. S. Howell, Assigned to Bell & Howell Co. 386

A Film Splicing Accessory adapted to scrape beveled portions upon the ends of the film in order to make a flat lapped splice.

1255257 E. G. Whitmore 386

A Splicing Bar for Motion Picture Film provided with ears to enter the standard film perforations and spurs to enter the central portion of the film.

### British Patents

111054 H. Shorzocks KJ82 KJ88

Dyeing of Colored Images. In a two-color film, where one image is to be dyed green and the other red, the green picture is first protected from action in some way or other and the red picture is bleached to silver iodide. The whole film is then immersed in a combined bath of basic red dye and green toning chemicals, thus toning the unbleached picture green and dyeing the bleached picture in the basic dye. The claims are for the employment of the combined bath instead of separate treatments.

111913 A. Edwards X1214

X-Ray Photographic Films. X-ray photographic films may be made by coating the support on both sides with the emulsion. The main advantage claimed is the elimination of defects due to the difference in the thickness of the emulsion coating. It is also claimed that the effective speed of the film is doubled by coating on both sides.

112210 R. V. Stambaugh 0631

Cartoon Cinematograph Films. The method is for incorporating moving figures, etc., with a set of wording, and consists of a process for taking the film such that the same figures with a different set of wording can be used for different advertisers. A negative film is first made with a black background and light or white drawings so that when developed it shows a white field with dark lines or surfaces depicting the action. For the text a white field is used with black lettering in a reverse position, and this is photographed upon a positive film with the negative film already made in place in front of it so that the text is photographed through the negative film, thus obtaining both the lettering and the figures of the negative in white on a dark ground.

111619 B. J. Hall 0726

Multi-Color Copies of Plans. The process described is a combination of the "Ordoverax" and "Hectograph" processes. A plate is coated with gelatine containing ferrous sulfate and on this is placed an exposed but undeveloped blue print, which will cause a catalytic action and will cause printers' ink to adhere wherever the exposed lines have touched. On removal of the blue print the lines are inked up and then on the gelatine surface the colloid is colored by suitable aniline dyes. The black or colored outline from the original drawing must be inked up for every impression but the dye will yield the color without inking, and a number of good impressions are easily obtained.

111240 F. J. von Gonton 242

**Printing Frame.** A photographic printing frame is fitted with a shutter which when withdrawn so as to start the exposure is locked into position by a retaining mechanism controlled by clock work so that after a definite period it closes.

111240 W. Dericksweiler 2683

**Exposure Meters.** An exposure meter combined with a stop watch in which the sensitized paper is fed in when the stop watch is used, thus combining the stop mechanism with a paper feed.

111109 J. A. Golden 3101

**Cinematograph Apparatus.** In a cinematograph camera the film is mounted on a carrier which is reciprocated with a step-by-step motion and is fed relatively to the carrier by a spring mechanism controlled by an escapement operated by the means for reciprocating the carrier; the camera is applicable also as a projection apparatus.

### Italian Patents

467/29-1917 Hess Ives Corp. K21

Improvements in apparatus for taking and exhibiting color pictures.

465/172-1917 G. Manzoni 084

Moving Photographs.

466/186-1917 A. Mansueti 044

Process for giving a relief effect to the image.

472/7-1917 R. Breyer and M. U. Scoop 048

Process of obtaining photographic images on metallic supports.

469/12-1917 J. Lafora 0649

Process for continuous description with photographic and photomechanical moving pictures.

471/213-1917 A. Del Bruno 089

Electric Photographic Apparatus for illuminating the route and for taking submarine pictures during the night.

464/170-1917 E. Galantino 222

Photographic Apparatus for enlarging and reducing.

468/54-1917 Laing Claytong 2682

Photometer for photographic purposes.

466/191-1917 A. Spiegel, R. S. Glendinning and G. Felsenthal 31

Improvements in apparatus especially adapted for moving pictures.

## German Patents

DRP292352-1914

A. Spitzer and L. Wilhelm J84

**Tellurium Toning.** In substituting tellurium chloride for gold chloride difficulties are encountered because the tellurium bath is strongly acid and the toning action is therefore slow. The toning action is accomplished very satisfactorily in the presence of hyposulfite of sodium or ammonium by using the alkaline tellurites (e. g. 50 cc. of hyposulfite 10%, 1 cc. of a 5% solution of sodium tellurite.) The operation requires 5-10 minutes. A bath of lead nitrate can be added.

DRP293004-1914

C. Schleussner Company K/33

**Polychromatic Screens for Color Photography.** Colored colloidal dry particles are applied directly to the support. There are no spaces between the particles, because they are cemented together by subjecting them to the vapor of a solvent. A small quantity of glycerine and acetic acid is also added. The acetic acid evaporates. The particles are equally distributed by means of a brush, and by blowing the superfluous particles are eliminated. In order to convert the colored particles to the nature of a mucilage, solvent vapors are passed over the surface.

DRP292193-1914

H. Arnold and Levy Dorn X116

**Plates especially adapted for X-Rays.** A patent which completes the previous patent No. 290872. The colloidal solution of selenium used in order to obtain greater sensitiveness has a tendency to fog the plate. In order to avoid the defect, two coatings are employed; one consisting of emulsion with the addition of selenium and the other of the usual emulsion.

DRP292723-1915

G. W. E. Sosna and I. E. Biedebach 11-G5

**Plates and Films made less sensitive to light by means of colored substances.** A patent which completes the patent No. 288328. Phenolphthalein is added to the emulsion, which becomes red in the alkaline developing baths.

# Monthly **ABSTRACT** Bulletin



May, 1918

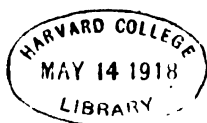
Issued by the Research Laboratory  
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## Errata

In the *Abstract Bulletin* for April, 1918,

Page 55, line 8, for p. 11 read p. 1.

Page 57, The reference for the Communication "The Nature of a Developer Sludge" is: B. J., 1918, p. 87.

## Photography

### How to Develop the Negative

G

Photo Miniature, Feb. 1918, No. 168

A Practical Guide to all methods of developing the negative, which have been approved in practice, explaining their advantages and giving working instructions covering their use.

### Another Wet Plate Developer

W. T. Wilkinson

G1

/63

Process Engrav., March, 1918, p. 40

Recommends in absence of acetic or sulphuric acid: Water 20 ozs; Iron Sulphate 1 oz; Bisulphate of Potash 1 oz.

### Economy in Hypo

H. J. Comley

G6

B. J., 1918, p. 106

Letter describing the methods employed for the greatest possible economy in the use of hypo, while at the same time insuring adequate fixing.

### Some Minor Processes of Photography

C. H. Bothamley

H

J-82

B. J., 1918, pp. 111, 123, 135

Phot. J., 1918, p. 48

This is the twentieth Traill-Taylor Memorial Lecture, and in it the author deals with reduction by alkaline persulfates chromium intensification and intensification and toning by metallic ferricyanides. The author suggests that in the case of persulfate some difficulties encountered might be due to the presence of chlorides or bromides either in the persulphate or in the wash water. Formule are given for the chromium intensifier, including some for the use of chromic acid and salt in the place of potassium bichromate and hydrochloric acid. In toning by the production of metallic ferrocyanides the process may with advantage be carried out in two successive operations instead of with mixed solutions, bleaching being first effected with potassium ferricyanide and then the bleached image treated with the metallic salt. The silver ferrocyanide can also be obtained by converting the silver image into silver chloride and then treating this with potassium ferrocyanide, thus avoiding the use of ferricyanide.

### Iodine and Iodine-

S. Becher and M. Winterstein

H1

1655

### Thiourea as Subtractive Reducers for Photographic Negatives and Positives

Z. wiss. Phot., 1917, 17, p. 1

(from J. Soc. Chem. Ind., Jan., 1918, p. 40A.)

Iodine cyanide reducer shows continued action after removal of the image from the reducing bath. The other methods of using iodine do not show this effect, hypo immediately stopping the action. When reducing with iodine in potassium iodide it is necessary to use hypo to dissolve the silver iodide formed, and also as a stop bath when using iodine combined with thiourea. Thiourea cannot be used in higher concentration than 4%, as otherwise it destroys the gelatine. Iodine is found to reduce in a manner similar to the ferricyanide-hypo reducer and not proportionally. When used with paper containing starch, iodine in potassium iodide gives a blue color which, however, is removed in the hypo bath.

# **Violet Brown Tones on Gaslight Papers by means of the Sulphide Toning Bath**

J-84

Lux, Feb. 15, 1918, p. 78

Several gaslight papers yield violet brown tones in the sulphide bath similar to P. O. Papers in the gold bath. Potassium Oxalate yields fine tones if added to the bleaching or the sulphide bath. Sedlaczek recommends the following formula in Phot. Chronik:

Water,	120
Potassium ferricyanide,	3
Potassium bromide, 10%,	150
Potassium oxalate, 10%,	300

After bleaching, the prints are washed and developed in

Sodium sulphide, 1%,	120
Potassium thiocyanate, 1%,	30

## **Decennia Practica—Color Photography**

K/33

B. J. Color Supplement, 1918, p. 12

Autochromes by Flashlight. This deals with special filters for flashlight work and for other artificial light sources.

## **Making Transparencies from**

A. S. Cory

K/41

### **Tri-Color Negatives**

Mot. Pict. News, March, 1918, p. 1942

A method of making three-color transparencies, for use as lantern slides, from sets of three-color negatives.

## **The Fox Method of Preparing Positives**

A. S. Cory

K/43

### **for Subtractive Two-Color Cinematography**

Mot. Pict. News, April, 1918, p. 2110

A review of recent patents by W. F. Fox, relating to the preparation of subtractive two-color images on one emulsion. The blue image is first obtained by exposing, developing, and toning blue (without fixing) in a one solution bath in the well-known manner. The red sensation image is then obtained by drying and printing on the same emulsion, toning the developed image in a bath containing a vanadium salt, and employing the toned image as a mordant for a red basic dye. In a later patent, (U. S. 1207527), the blue-green image is first obtained by toning in an iron vanadium bath and the red image by drying, exposing and developing as above and applying the Traube process. In a still later patent, (U. S. 1256675), the blue-green image is obtained by the usual two-solution process and the red image by toning with uranium.

## **The Recovery of Silver Residues**

P1

B. J., 1918, p. 98

The author tried retesting with sodium sulphide a used hypo solution from which the silver had been precipitated with liver of sulphur, and found that a further, heavy precipitate of silver sulphide was obtained. It is suggested that sodium sulphide should be substituted for liver of sulphur.

# True Photo-chemical Processes F. Weigert 012

Z. Elektrochem., 1917, 23, p. 357

(From J. Soc. Chem. Ind., Jan., 1918, p. 108A)

A theoretical paper, in which after real and ideal photochemical processes have been differentiated and a general survey has been made of a number of real processes, the author propounds a theory of the mechanism involved in the reactions involved. The author includes in the general discussion the processes operative in photo-electric actions, fluorescence, luminescence, and Röntgen-ray effects.

## A Special Problem in Depth 019

B. J., 1918, p. 99

The article deals with the calculation of the stop necessary to produce a given depth of focus.

## Axial Aberrations of Lenses E. D. Tillyer and H. I. Schultz 019

B. J., 1918, pp. 101, 113, 124

Paper from the Bureau of Standards describing the method of the Bureau for the measurement and plotting of aberrations. The method employed is based on that of Hartmann.

## Photographing Glass, China and Silverware 032

The Process Engrav., Feb., 1918, p. 27

Discourages any dulling of surfaces and gives hints as to how good photographs can be made without treatment of the articles.

## Developer for Wet Collodion O. Pfenninger 163

Negatives

B. J., March 1, 1918, p. 106

The following is recommended instead of developer containing alcohol:

### STOCK SOLUTION

Gelatine, . . . . .	2 ozs.
Acetic Acid, 99%, . . . . .	20 "
Water, . . . . .	30 "

### DEVELOPER

Iron Sulphate, . . . . .	4 "
Stock Solution, . . . . .	3 "
Water, . . . . .	50 "

## Chapters on Intermittent Movements A. S. Cory 3201

Mot. Pict. News, April, 1918, pp. 2266, 2432

Part I. The Geneva Stop.

## Photographic Words and Phrases

Photo Miniature, March, 1918, No. 169

A pocket dictionary of the technical words and phrases used in current photography and what they mean.

## The Fundamentals of Photography

C. E. K. Mees

Kodakery, April, 1918, p. 18

Chapter I—Light and Vision—This is the first of a series of articles on the elementary theory of photography. The present chapter deals with the dye and its reaction to light, the sensitiveness of the retina, and the change in the size of the pupil with the intensity of the light.

## Photo-Engraving

## Copying to Exact Size

L. G. Rose 07002

Process Engrav., March, 1918, p. 46

Suggests the use of a beam compass for measuring, and the use of a mariner's compass and plumb-bob to determine that camera and copyboard are strictly parallel.

## Want of Density in Collodion Negatives

J. G. Wood 07003

Process Work and Electrotyping, Jan. 1918, p. 96

Suggested causes are: Bath too weak or too strong; too acid or too hot; collodion too old; light too weak or stop too small.

## Negatives That Have Been "Overcut"

S. H. Horgan 07003

Inland Printer, April, 1918, p. 63

It is suggested that negatives that have been reduced too much may be sometimes restored by re-developing, having first added some silver solution to the developer.

## Etching Silver Plates

S. H. Horgan 07006

Inland Printer, April, 1918, p. 64

The use of nitric acid solution is recommended, adding gum or gelatine to thicken the mordant in case it attacks the resist.

## Etching Silver

J. G. Wood 07006

Process Work and Electrotyping, Jan., 1918, p. 96

A plate is coated with collodion, then enamel solution and print made which is then transferred to silver and burned in. Etched with nitric and nitrous acid, pyro-ligneous acid and very little corrosive sublimate; proportions not given.

## Rotary Photogravure Unsuitable for Bank Notes

0713

Process Work and Electrotyping, Jan., 1918, p. 94

Description of exhibit by A. E. Bawtree, showing that rotary photogravure notes can be easily forged.

## Agreement between Employers and Men in Chicago

Phot. Engr. Bull., Feb., 1918, p. 22

A reprint of the full text of this agreement containing the famous Clause 10 setting forth the terms of the co-operation between the employers and workmen.

**A Slam at Photo-Engravers**

R. Scaver

Printing Art, March, 1918, p. 53

A sarcastic reference to the engravers' failure to use the point system for measuring blocks.

**The Choice of Suitable Engravings**

J. F. Tobin

Am. Printer, March 20, 1918, p. 25

Points out there is a dead level in illustration, because purchasers of engravings will not take advantage of the many different effects they could get if they co-operated with the engraver.

**To Avoid Fatalities from Nitric Acid Fumes**

E. W. Hunter

Process Engrav., March, 1918, p. 33

Suggests that (1) Nitric Acid should be kept in smaller containers than the regular large carboy; (2) Carboys should be carefully examined for breakage before being taken into the workroom; (3) Gas masks should be kept handy, and also several pails of earth or alkali such as soda or slaked lime; (4) In the event of anyone being overcome with fumes, thoroughly mixed chloroform water (Chloroform 30 minims in Water 8 ozs.) should be administered every 10 minutes until patient recovers.

## Physics

**A New Globe Photometer for Incandescent Lamps**

R. Von Voss

Electrician, Feb. 1, 1918, p. 630

(Translated from Elektrotechnische Zeit., No. 14, 1917)

An instrument of the Ulbricht Globe Photometer type, modified in such a manner as to render its use more rapid and convenient. Direct reading from 2.5 to 750 mean spherical candle-power.

**X-Rays and War**

G. W. C. Kaye

J. Roentgen Soc., Jan., 1918, p. 2

This paper is a very clear exposition of the science of the X-rays in the war, in medical practice, in industry, and in general science. The author also discussed the value of the pure research to industry and makes a plea for the proper recognition of the science worker after, as well as during, the war.

**X-Rays Absorption Spectra**

J. W. Nicholson

J. Roentgen Soc., Jan., 1918, p. 18

This paper is a very clear summary of the research of M. De Broglie in investigating the absorption phenomena of elements to X-rays. The conclusion is that the X-rays absorption band of an element corresponds to its emission band when used as a radiator; that is, to its characteristic radiation.

**Resonance Spectra of Iodine****R. W. Wood****Phil. Mag., March, 1918, p. 237**

A continuation of the author's previous articles. The mercury green line is used as excitation. The series of resonance lines is studied with especial reference to the absorption spectrum of iodine.

**Calculation of Planck's Constant  $C_2$** **J. H. Dellinger****Bull. Bur. Stand., March 6, 1917, p. 535**

A more general method of calculation than has heretofore been employed, using as a basis the energy-wave length curve at constant temperature.

**Wave-length Measurements in Spectra from  
5600A.U. to 9600A.U.****W. F. Meggers****Sci. Papers, Bur. Stand. No. 312**

The arc spectra of twenty of the chemical elements, including the alkali metals, the alkaline earths and elements commonly found in iron as impurities were photographed with plates sensitized for the long waves with dicyanin. The photographs were made in the first-order spectrum of a concave grating of 640 cm. radius, the grating being mounted in parallel light.

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## **General and Inorganic Chemistry**

**Modern Methods of Sulphuric Acid Manufacture****G. L. Moss 1511****J. Soc. Chem. Ind., 1918, p. 68 T**

The article is principally concerned with the chamber process, no mention being made of the contact method. Useful information is given with regard to the purification of the gases and the concentration of the chamber acid.

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## **Analytical Chemistry**

**The Rapid Estimation  
of Sulphuric Acid****H. D. Richmond 1511****and J. E. Merreywether****Analyst, 1917, p. 273**

Four hundred grams of water are measured into a vacuum jacketed flask provided with stirrer and sensitive thermometer; when temperature is constant, 5 cc. of the sample are added, and the temperature again read when constant. From the rise in temperature the strength of the acid can be calculated with an accuracy of one-tenth per cent.

**Estimation of Pyridine  
in Ammonia****T. F. Harvey and C. F. Sparks****J. Soc. Chem. Ind., 1918, p. 41 T**

Pyridine bases are precipitated by iodine from a 1 in 200,000 acid solution containing sodium chloride. The precipitated pyridine iodide is then treated with thiosulphate and titrated with sulphuric acid.

**Gravimetric Estimation of Sulphuric Acid  
and Barium as Barium Sulphate****Z. Karaoglanow****J. Chem. Soc. Abst., 1918 ii. p. 47**

An investigation of the influence of various substances on the precipitation of barium sulphate. Low results are obtained when a large excess of barium chloride is added, but when hydrochloric acid or nitric acid is also present, the results are too high. Potassium salts cause the results to be low, unless hydrochloric acid is also present, when they become too high; hydrochloric acid, however, increases the low results obtained in the presence of both potassium chloride and potassium sulphate. Sodium, ammonium, zinc, magnesium and aluminium chlorides have no effect on the precipitation, ferric chloride makes the figures for the barium sulphate to be about 3% too low, and chromium chloride has a similar affect.

**Colloid Chemistry****The State of Colloidal Aggregation of Rubber in Latex****Caoutchouc, 1918 p. 9431****(From the Delft Laboratory)****The Vulcanisation of Rubber****A. H. King****Met. Chem. Eng., March 1, 1918, p. 243**

A very readable review. The various chemical, physical, and colloid chemical theories are sketched, and the relation of organic catalysts to Erdmanns' "Thiozone" Theory touched on. It is pointed out that the correlation between a simple chemical coefficient of vulcanisation (percentage fixed sulphur) and the physical properties, as tensile strength etc., is very small and uncertain. A parallel instance is of course the low correlation between coefficient of nitration of cellulose and the physical properties of nitro-cellulose solutions. This is attributed to difference in state of polymerisation or more generally of dispersity. Some account is given of the effect of accelerators and of temperature on vulcanisation.

**Some Studies of Soap Solutions III****V. Lenher and G. M. Bishop****J. Phys. Chem., Feb., 1918, p. 95**

Measurements of the adsorption of sodium oleate to Ceylon graphite, willow charcoal and animal charcoal. The last shows the greatest adsorptive power.

**Colloidal Chemistry in Papermaking****W. M. Bovard****Paper, March 27, 1918, p. 11**

The paper contains a brief discussion of beating, and the different factors affecting the hydration and the swelling of the stock in the beater. The structure of the colloidal suspensions and colloids is reviewed and a theory of hydration of cellulose developed on the basis of preferential adsorption of hydroxyl ions. This theory, in conjunction with the electrical theory of colloids, is applied to the reaction of colors, clay, rosin size and alum in and with the fibers, and a method suggested for determining the proper order of adding materials to the beater in order to get the greatest retention.

It may be noted that the author in this paper repeats the old fallacy that the cotton fiber can exercise a capillary traction through its inner canal or lumen. Whether the cell be closed, or opened up by cutting and pulping, experiments directed to this end show no support for such an effect, but confirm the conclusion of Mowenthal that the capillarity of cellulose fibers is in the interstices between several fibers.

## Organic Chemistry

The Toxicity of Methyl Alcohol in Relation to its Industrial Uses T. D. Morson 1516

J. Soc. Chem. Ind., 1918, p. 26 T

An important review of the literature of the subject, giving abstracts of all important publications on the question. The poisonous nature of methyl alcohol is made clear, and a plea for its freedom from taxation is put forward, on the ground of the technical importance of the pure substance and its manifest unsuitability as a beverage. Incidentally it is stated that the cheapness of certain German photographic developing agents was largely due to the fact that methyl alcohol was tax-free in Germany. This suggested that, in view of its high technical value, its use as a denaturant of ethyl alcohol should be discontinued.

Distillation Test of Petrol N. A. Anfilogoff

J. Soc. Chem. Ind., 1918, p. 21 T

A more rapid and simple method for evaluation of gasoline than that of Redwood. It is claimed that by this method the presence of very low boiling fractions can be detected in a manner impossible in the Redwood Method.

The Distillation of Wood J. C. Lawrence

J. Soc. Chem. Ind., 1918, p. 5 T

A full summary of the modern state of the art.

Apparatus for the Determination of Boiling Points A. Edwards

J. Soc. Chem. Ind., 1918, p. 38 T

New design of still head in which the entire length of the thermometer is jacketed with the vapor.

Identification of Developers 153

De Camera, Feb. 1, 1918, p. 80

Quotes a few tests for distinguishing the commoner developing agents, including an apparently new series published by Valenta, based on the colors formed on treating the developer with nitro-molybdic acid solution.

Report on the Testing of Paper. Changes and Additions Made to the Annual Report of the Paper Testing Committee

Paper, Feb. 20, 1918, p. 22

See this *Bulletin*, 1917, p. 218.

## From Eastman Kodak Research Laboratory

Astronomical Photography with a 3-A Kodak F. E. Ross  
Report No. 480

When a Kodak is exposed to the starry sky the negative will show trails of the stars due to the rotation of the earth during the exposure. Good trails of stars as

faint as the fourth magnitude can be secured with exposures of 10 seconds up, working at  $f/7.7$ . The only effect of lengthening the exposure is to increase the length of the trail. A good snap-shot image of the moon can be obtained with a Kodak, even showing some lunar detail. For good results in photographing the stars and the moon, very accurate focusing is necessary. This can only be secured by taking a number of pictures with focusing scale set at a number of points differing by one millimeter, as unless one takes such a series of photographs one is never sure of perfect focus.

A Method of Mounting J. I. Crabtree H4 07135  
Commercial Film Negatives on a Glass Support  
Report No. 487

Film negatives may be mounted on to a sheet of glass so as to obtain a composite negative for photogravure printing and the like by means of a solution of gelatine in glacial acetic acid prepared by warming together equal weights of gelatine and acetic acid and stirring at intervals. If too thick the solution should be thinned with acetic acid. A little of the solution should be applied to each corner of the film, and when tacky the film pressed into position on the glass. Within about half an hour the assembled negative will be ready for printing.

The Sensitometry of Adolph H. Nietz and Kenneth Huse  
Photographic Intensification  
J. Frank. Inst., March, 1918, p. 389  
Communication No. 58

This paper gives an account of a series of measurements made on the effective printing contrast of negatives intensified by various processes, the intensified negatives ranging from those practically neutral to very highly colored deposits.

## Patent Abstracts

### U. S. Patents

1258636 A. J. Newton and S. M. Furnald K07332  
Assigned to E. K. Co.

Simple Testing Device for determining the ratio of exposure required by the various filters in color work. (Sold by the Company as the "Ratiometer").

1256675 W. F. Fox, Assigned to Natural Color K/43  
Pictures Co., Inc.

A Photographic Two-Color Process, in which the blue image is obtained by successive baths of potassium ferricyanid and acidulated ferric ammonium oxalate. The orange-red image is obtained by treating the corresponding silver image with successive baths of potassium ferricyanid and acidulated uranium nitrate.

1258087 P. D. Brewster K/43

A Color Film Negative. On one side of the negative is a red image and on the opposite side a corresponding green image in suitable register therewith.

1259411 W. V. D. Kelly, Assigned to Prizma, Inc. K/43

A Process for Making Colored Cine Film, in which the base has a sensitive emulsion on each side and color value pictures are printed one on each side. The printing is done successively and the development of both sides performed at the same time. One side is then rendered color absorptive, dyed and a protective coating applied thereto, then the other side is dyed.

1258519 W. Bach and W. A. Cunningham 061-2321

An Arc Lamp for Motion Picture Studios made up in units, each unit embodying two sets of electrodes arranged to give good distribution of light. The feeding mechanism is designed to insure a steady arc.

1257682 E. Davis 0649

A Method of Treating Films to eliminate scratches. The rear face of the film is first buffed on a cloth wheel, using a mixture of abrasive, polishing materials, and grease. The film is next washed in benzene and cleaned with brushes. It is then washed in a water and ammonia bath and massaged with a silk sponge until clean. After rinsing, it is treated with a glycerin bath, then dried and finally polished.

1256591 R. D. Pike 066

A System for Automatically Indicating in the lobbies of Motion Picture Theaters the plot of the picture which is then being exhibited, the amount of plot thus indicated corresponding in amount to the extent of film which has been displayed.

1259711 H. Allisson, Assigned to Commercial Research Co. 067

An Apparatus for Correcting Distortion in Motion Picture Projections. It comprises a series of warped or asymmetric reflectors placed in the path of the light between the projection machine and the screen to correct the distortion of the rays due to differences in the length of travel to different parts of the screen from the lens of the projection machine when the rays from the latter are thrown obliquely upon the screen.

1259775 W. J. Prucha and C. W. Weatherwax 068

A Motion Picture Apparatus in which the pictures are taken alternately through two lenses and thrown by means of prisms upon alternate picture areas of the cine film. They are projected in the usual way and are said to give a stereoscopic effect.

1258982 H. C. Boedicker 0722

A Method of Holding the Metal Plate used in photolithographic printing to a board or bed or cylinder of a printing press by electro magnetic means.

1259355 I. S. Bunnell 089

A Phototypographic Apparatus, in which a negative having a variety of different characters thereon can be easily shifted from one position to another to light print any desired character upon a sensitive surface.

1258913 J. Koetschet 1513

Process for the Manufacture of Cellulose Acetate. The new feature consists in a pre-treatment of the cellulose with glacial acetic acid containing 1 to 20 per cent of acetic anhydride and a small proportion of a condensing agent such as sulfuric acid. It is claimed that the products of acetylation are more homogeneous than those obtained by hitherto described processes.

1257842 J. G. Goddard and W. S. Hutchings 2103  
Assigned to Seneca Camera Co.

A Simple Clamp for holding the movable lens carriage of a camera in adjusted position.

1258436 M. Niell 2103

A Folding Roll Film Camera in which the front board is carried by four pivoted struts, each having specially curved slots cooperating with pins on the lens board, whereby when the camera is closed the struts fold into proper position.

1257874 J. M. Jordan, Jr. 215

A Box Camera in which the supply reel is provided with a coiled spring, which is placed under tension as the film is wound onto the winding reel. After all of the exposures are made, the spring is released by pressing a button and the film thus automatically re-wound on the original supply reel.

1256387 W. Bausch 215

A Photographic Roll Film Camera in which successive areas of fresh film are wound into exposure position by repeatedly pulling at a cord cooperating with a drum on the winding shaft. To insure that a correct amount of film be wound at each operation, a corrugated measuring roll is employed which stops the winding shaft through a pawl and ratchet mechanism at the proper time. The diameter of the measuring roll is adjustable to allow for films of different types.

1260049 R. E. Reed 2151-2106

A Camera having a spring wound flexible focusing screen. The camera is also provided with a hinged adapter for roll films.

1257656 W. A. Warman 2152-2155  
Assigned to Keller Mechanical Engraving Co.

A Roll Film Camera in which the surface to be exposed is held in a curved form while a shutter having a narrow slot swings across it, the lens also swinging. This is substantially the system used in panoramic cameras, but in the present instance only a normal angle is covered, the object being to utilize a cheap lens to the best advantage. The shutter and film-wind are interconnected to prevent double exposure.

1259152 S. W. Spangler and C. L. Klapp 2153

A Film Marking Camera in which a platen carrying a pigment paper lies beneath the film. Through an aperture in the camera a stylus presses the film against the platen, the pigment from which is thus transferred to the film. The aperture and the platen are adjustable so that the mark thus made can be either on the exposure area or off it.

1258905 W. S. Isbills 221

A Post Card Projector operating on opaque or reflection principle. The cards are carried upon an endless belt which moves them successively into projection position.

1257986 J. A. England 2235

A Projecting Apparatus having a reciprocating carrier for lantern slides, there being a connection between the slide and the shutter of the apparatus, such that the shutter is closed during the changing of the slides and automatically opened when a new slide is in proper position.

1258756 G. M. Dye 251

A Frame for Holding Films, comprising a tube having a series of slots in which films may be slipped. A pin is then thrust through the tube, piercing the films and holding them in place during photographic operations.

1257624 P. J. Marks, Assigned to E. K. Co. 2621

A Studio Shutter having a pair of folding flexible curtains for closing the lens aperture, there being a stiffener at the edge of each curtain and oppositely acting levers for moving such stiffeners toward and from each other.

1257648 C. F. Speidel, R. Kroedel and W. A. Riddell 2645  
Assigned to E. K. Co.

A Focusing Finder. A range finder is built into the lens carriage in such a way that when it is sighted on a given object the camera lens will be in focus thereon. The ray bending means of the range finder includes a pair of relatively movable positive and negative lens sections.

1258398 H. K. Cummings and L. Thompson 2645

A Focusing Finder comprising an auxiliary lens moveable with the main camera objective and an eye-piece fixed upon the camera body. The eye-piece comprises an ordinary direct vision finder with a small concave lens cemented to the middle of it. The focusing is done through the small lens, while the direct vision finder serves to indicate the extent of the view.

1258459 R. A. Reed 2645

A Range Finder combined with a camera with the intention that the camera shall be in focus on a given object when the range finder is sighted thereon. The range finder is of the type in which a pendulum swings over a scale when a straight edge is sighted at the base of the object to be photographed, assuming that such base lies in the same horizontal plane as the feet of the photographer.

1258523 A. Beck, Assigned  $\frac{1}{2}$  to H. H. Simms 2655 2153

A Sensitive Element for use in film packs, carrying devices which enable inscriptions to be written and light printed thereon. The film is provided with a transverse slot near one end and beyond the slot carries a special small sensitized area on the back in a position to co-operate with a carbon paper sheet. During printing the inscription formed on the area is brought into position by doubling over the end of the film.

1259069 W. R. Bardsley 2656

A Device by means of which small sized film packs may be used in larger sized film pack adapters. It consists of a frame insertable in the adapter, the film pack being slidable on the frame so that the tabs may be brought into pulling position when drawing a fresh sheet of film into place. During the taking of the picture the film pack is slid down on the frame to center it with the camera lens, a special flexible curtain excluding the entrance of light through the top of the adapter.

1259373 L. R. Dice 2682

An Exposure Meter comprising two disks, one having a series of openings and the other one carrying a color screen. The object to be photographed is observed by bringing the color screen before the different openings until that giving the desired brilliancy is reached. The disks are calibrated to read directly in terms of time and stop.

1258437 O. A. Nord 269

A Camera Carrying Case so arranged that it is unnecessary to remove the camera when taking pictures. The case is provided with a door which connects and opens with the camera door. In the rear of the casing there is a collapsible chamber carrying a mirror to facilitate ground glass focusing. The sides of the case are provided with tripod sockets.

1258712 R. S. Shaw, Assigned  $\frac{1}{2}$  to J. F. Kavanaugh 312

A Machine for exposing simultaneously a plurality of motion picture films. The machine is devised so that one can take several exposures at once and thus avoid unnecessary expense and time in retakes.

1258352 A. Mehlfelder 3201

A Motion Picture Machine in which the size of the loops is automatically maintained. A change in the size of the loop automatically changes the gears which determine the speeds of the feeding sprockets, thereby correcting the alteration in the loop.

1258499 A. P. Taber 3201

A Loop Forming Mechanism for Motion Picture Machines. The take-up mechanism may be temporarily uncoupled to increase the size of the lower loop in case the latter becomes too small.

1259066 T. Armat 3201

A Motion Picture Projector in which, by means of special gearing, the period of movement is unusually short relative to the period of rest of the film. In consequence, projection at the rate of eight pictures a second is possible, a special shutter being then used which makes four revolutions per picture.

1257593 R. J. Emory 3202

Assigned to Baird Motion Picture Machine Co.

A Film Gate for Motion Picture Apparatus in which two pairs of shoes are arranged in line with each other on each side of the gate, one pair being spring-pressed so as to have rocking and bodily movements, while the other pair has bodily movements only.

1258704 C. J. Peterson 3202

A Motion Picture Projector having means for framing the picture by bodily shifting the film feeding sprocket and connected parts, a driving connection with the shutter being maintained at all times by means of a planetary gear arrangement.

1258705 C. J. Peterson 3202

A Motion Picture Projector in which the film is framed by bodily shifting the intermittent sprocket, a synchronous driving connection being maintained by special gearing between said sprocket and the shutter.

1257132 O. M. Sheck 3205

Assigned to The Argus Lamp & Appliance Company

A Special Lamp-House by means of which motion picture projectors equipped with arc lamps can be quickly adapted to Mazda lamps.

1259091 H. W. Floyd 3208

A Winder for Motion Picture Film in which the winding is done from the outside in, so that rewinding is unnecessary.

1259067 T. Armat 3209

A Motion Picture Projection Apparatus in which the light is surrounded by a water chamber which extends between it and the condensing lens. Baffle plates aid in the proper circulation of the water. The heat rays are so absorbed that inflammable film may be projected indefinitely without danger of ignition.

1258226 S. Kamowski 321

A Multiplex Motion Picture Apparatus in which pictures are taken on or projected from film in two alternating series, a picture from one series being projected or taken, while the film for the corresponding picture of the other series is being shifted into taking or projecting position. A pair of lenses with a single shutter serving both of them are provided.

1259365 G. W. Cooper 321

A Machine for Taking and Projecting Motion Pictures in which two films are used and exposed through two different lenses. The shutters are so arranged that the films are alternately exposed and projected and are alleged to give a stereoscopic flickerless projection.

1260185 P. R. Gonsky, Assigned to Endlessgraph Mfg. Co. 321

A Motion Picture Machine to be operated by one man, in which all operations are automatic, particularly those of threading the film through the machine and causing the finished film to be removed and rewound and a new film to be started on the new reel without attention from the operator other than the operation of the usual crank handle or motor driven shaft.

1260280 M. H. Avram 321

Assigned to Slocum, Avram & Slocum, Inc.

A Motion Picture Projector in which both reels are mounted in the base and the device is otherwise rendered compact so that it is easily portable.

1258298 S. Bardy 322

A Motion Picture Projector in which the film is moved continuously. The optical rectifying system includes drums bearing series of lenses on their peripheries.

1260221 L. McCormick 324

Screens upon which motion pictures are to be projected, in which the screens carry a background, or surface modification, such as the effect of an open lighted window or a color so as to give a night effect. The picture being thrown upon the screen is combined with the color or background to give the desired effect.

1258192 C. J. Coleman 324

A Projection Screen particularly designed for motion picture work, consisting of a pyroxylin body portion, a silver coating and a partially opaque layer of varnish mixed with powdered magnesium.

1259246 J. Kleidman, Assigned to Aheadofit Pictorial Co. 325

A Motion Picture Apparatus of the Geneva movement type, in which the construction is simplified so as to make the apparatus suitable for schools and small auditoriums, rather than for use in large theaters.

1259126 W. Parkes, Assigned to A. L. Garford 361

A Turn-Table Tripod Top for use in taking panoramic motion pictures.

## British Patents

112769 Hess-Ives Corporation K/3 K/45

Color Photography. Three-color records are produced as two negatives by recording two of the primary colors in one composite negative and recording the third primary color in another negative; the negatives may be used to produce three separate colored positives which are united to form a multi-colored photograph. The negatives may be produced by means of two plates bound together with their sensitive surfaces inwards. The front plate has a two-color screen between the base and the emulsion, the colors magenta and yellow, and the emulsion being insensitive to red, so that the images produced by exposure are records of the primary colors blue and green. The rear plate is sensitive to red, and if it is also sensitive to blue and green, is either stained red or has a thin red screen between it and the front plate, the image produced on it, which covers the whole plate, being a red color-record. The magenta of the two-color screen may be tinged with yellow, or a yellow screen may be employed at the lens to reduce the effect of the blue light. After exposure, the plates are separated and developed, etc., and the rear negative is used to make a ferrocyanide or other blue-green positive. The composite negative is used first with a green screen to make a positive bearing a magenta image, and then with a blue screen to make a positive bearing a yellow image, and the three positives are afterwards combined. Alternatively the three positives are made successively on the same base. The positives may be dyed gelatine reliefs, and such reliefs may be used to make prints by imbibition. The two-color screen may be made by coating the base with fine-grained gelatine, printing a carmine or magenta pattern on it with a greasy ink, and dyeing the unprinted parts yellow. The screen may have only one of its colors a secondary color.

112447

Ritter and Uhlmann 3205

**Optical Projection Apparatus.** A lamp for optical projection apparatus has its casing formed as an ellipsoidal reflector with the source of light situated at one focus and the condenser at the other. In a modification, the casing is constructed in two separate parts which are of different diameter but have the same foci. The condenser may consist wholly or partly as a liquid lens forming a heat filter.

112782

H. van Cappelle and C. van Velsen 3209

**Cinematograph Apparatus.** In a cinematograph projector, an automatically actuated screen for absorbing the heat rays emanating from the light source, and a light source comprising an alternating current arc lamp with carbons evolving very little heat in proportion to the lighting power, are used in conjunction with a projection screen coated with aluminum bronze, brass, or other metal to enable any picture on the film to be projected continuously.

112488

W. H. Selby and F. A. Selby 322

**Cinematograph Apparatus.** In a cinematograph projector or camera in which the film is fed uniformly, the film movement is compensated by means of an annular prism, the cross section of which is uniform but varies continuously in angular disposition. The centers of all cross sections of the prism lie in a circle, but the inner edge is spiral and housed in a groove in the periphery of a drum which carries the prism. The drum is mounted on a shaft which is geared to the film-feeding mechanism so that it makes one revolution during the time taken by the film in moving through one picture space. The prism is arranged in a projector so that, when a picture has arrived at the opening, the axis of projection passes through one of the parts of the prism the cross section of which is in an extreme position, the consequent deflection varying progressively with the rotation of the prism until another picture arrives at the opening and is projected in its turn. Specification 16812/98 is referred to.

# Monthly **ABSTRACT** Bulletin



June, 1918

Issued by the Research Laboratory  
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Rochester, New York

T. F. Cannon,  
Reuben.

# Monthly Abstract Bulletin

Vd. 4, No. 6

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June, 1918

## **Additions to Numerical Classification**

1545 Hypo-Eliminators.  
/76 Palladium.  
1314 Palladium Papers.  
366 Driving Mechanism.

## Photography

- A Personal System of Using the Bee Meter M. M. Bitter F5 2683

B. J., 1918, p. 170

A description of an American amateur's experience in the use of the Watkins meter with specific instructions for obtaining results which are stated to be more accurate than those which follow the use of the meter according to the maker's instructions.

- Positives on Glass L. Rickards G5 163

Camera Craft, May, 1918, p. 199

White deposit developers which contain large excess of potassium bromide. Pyro and Hydrochinon recommended.

- Decennia Practica—Color Photography K/33 K/45

B. J. Color Supp., 1918, p. 14

This installment deals with making Autochromes by flashlight and with copies, prints, etc., from Autochromes.

- Color Photography A. Traube K/42

Lux Foto-Tijdschrift, March 1, 1918, p. 90

A new panchromatic plate made by Dr. Otto Perutz of Munich, is exposed through a blue, a green and a red filter. Then three positives are made, treated in a bath and dyed yellow, red and blue respectively. The whole of the process is said to be finished in 20 minutes. Also color prints can be made by this method. The advantage claimed by the process is that any desired number of color pictures can be made automatically, quickly and cheaply. The process is called Uvachromie. It is exploited by the Uvachrome G. m. b. H. of Munich. Details regarding the baths are not stated.

- Factors in the Blistering of Prints 041

B. J., 1918, p. 158

The hardness or softness of the wash water as a factor in the blistering of prints is one which is connected with other causes such as the existence of incipient blisters in the paper itself or their production between the film and the paper by improper usage. Further correspondence on this subject is found on pages 174-175.

- Images on Silvered Waste-Negative Glass C. W. Waggoner 041

B. J., 1918, p. 161

In silvering old glass negatives from which the gelatine has been removed in order to make mirrors it was discovered that in a number of cases positive images appeared on the glass. No method for cleaning the glass would prevent these images appearing. The phenomenon is ascribed to the action of gelatine on the surface of the glass, this action being weakened where much silver was developed.

- Matt Palladiotype W. H. Smith 1314/76

B. J., 1918, p. 169

A demonstration at the Croydon Camera Club. Palladiotype paper is developed in a solution of citrate acidified with citric acid, and the iron salts are cleared in fresh

baths of the same composition. Over-exposed prints can be saved by a stop bath of dilute hydrogen peroxide. The initial image in printing is somewhat stronger than with cold bath platinotype papers.

#### Permanganate Hypo-Eliminator

1545

B. J., 1918, p. 158

Quotation of a definite formula for the use of this eliminator taken from the Journal of the Photographic Society of India.

#### The Fundamentals of Photography

C. E. K. Mees

Kodakery, May, 1918, p. 24

Chapter II. This is the second of a series of articles on the elementary theory of photography. The present chapter deals with the nature of light.

#### An Inside View of Kodak Advertising

B. J., 1918, p. 148

Reprint of an interview with Mr. L. B. Jones, published originally in "Printers' Ink".

Major C. D. M. Campbell of the Royal Flying Corps, died on March 9th.

B. J., 1918, p. 151

Prof. Bruno Meyer, a well-known archeologist and writer on art died at the age of 77. He has done much to increase the art value of photography.

Lux Foto-Tijdschrift, March 1, 1918, p. 91

## Photo-Engraving

#### The Autochrome Plate in Photo-Lithography

A. C. Austin

K07211

Reprinted from the National Lithographer.

B. J. Color Supp., 1918, p. 13

The author considers that Autochromes will be much used in photo-lithography. He recommends the preparation of two autochromes of any subject, one being reversed as usual to a positive, and the other being left as a complementary color negative. The first is used as copy for the lithographic artist, but the negative is used for making the selection positives in the camera.

#### Kalkotype. A new Engraving Process

07

Inland Printer, May, 1918, p. 239

Drawings (or rather scratchings) are made in the thick, soft coating of the Kalkotype matrix board, and from these a stereotype is made. It is apparently similar to the old chalk plate process.

#### Modern Wet Plate Formula

W. T. Wilkinson

07

Process Engrav., April, 1918, p. 58

Recommends thin collodion; commercial iron sulphate and gelatine dissolved in weak sulphuric acid for developer.

- Half-tone Depths . N. S. Amstutz 70  
Process Engrav., April, 1918, p. 61

Discussion and tables showing depths of different tones with various screens in half-tone etchings. The loss of depth in an electrotype made from a half-tone is said to be as much as 3.9 thousandths of an inch in the high lights.

- The Murphy Etching Machine 07006M  
Plate Makers' Criterion, May, 1918, p. 65

An announcement of this machine without any particulars but with some questionable statements regarding undercutting.

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## Physics

- The X-Ray Spectra and the Constitution of the Atom L. Vegard  
Phil. Mag., 1918, p. 293

An application of Bohr's theory, in which the rings of electrons lying near the nucleus of the atom are shown to account for some of the X-ray spectral series, just as the outer rings have been shown by Bohr and others to account for spectral series in the visible spectrum, notably the hydrogen and helium series.

- The Visibility of Radiation in the Blue End L. W. Hartman  
of the Visible Spectrum  
Astrophys. J., March, 1918, p. 83

A re-determination of the visibility of radiation from 4100A to 5000A, in which 20 observers took part. Visibility at 4100A is found notably less than that found by previous investigators, while visibility at 5000A is found to be higher. It would appear that there is considerable systematic error in work of this character.

- Ultra-Violet Transparency of the Lower Atmosphere, R. J. Strutt  
and its Relative Poverty in Ozone  
Proc. Roy. Soc., 1918, p. 260

Results of photographing the cadmium spark and the mercury arc at long distances are here given. The lower atmosphere is found to be comparatively transparent to ultra-violet light. The line 2536 AU can be detected in the spectrum of a mercury lamp four miles distant. The solar spectrum, even when observed from high altitudes when the equivalent thickness of air is less than four miles, is limited to 2922 AU. The lower atmosphere is therefore much more transparent to ultra-violet light than the upper atmosphere. Since the limitation of the solar spectrum is almost certainly due to the presence of ozone, it follows that there must be much more ozone in the upper than in the lower atmosphere. More absorption was found in 0.27 mm. of ozone than in four miles of lower air. Taking scattering into account, the investigation gives no evidence of the presence of ozone in the lower atmosphere.

- Fundamentals of Illumination Design—Part I W. Harrison  
Fundamental Concepts  
Gen. Elec. Rev., May, 1918, p. 353

In this series of articles the author has outlined the principle of the illumination.

design. The subject matter has been divided into four headings, viz: Fundamental Concepts, Illumination Design, Reflectors and Enclosing Glassware, and Illustrative Problems of Lighting. The first of these subjects is treated in this paper.

The Resolving Powers of X-Ray Spectrometers and the Tungsten X-Ray Spectrum E. Dershem

Proc. Nat. Acad. Sci., March, 1918, p. 62

Derives formulas for resolving power and shows that resolution may be increased by an increase in order of spectrum, by increase of distance of plate from crystal, by decrease in width source, or by decrease in thickness of crystal. True position of a line can be obtained only by measuring to the most deviated edge and then going into the line a distance half the width of the slit. Results on X-Ray spectrum of tungsten are tabulated for 19 lines in the L group and 4 lines in the K group. Results accurate to 0.1% for the L group and to 0.8% for the K group.

The Primary Monochromatic Aberration of a Centered Optical System S. D. Chalmers

Proc. Phys. Soc., 1918, p. 100

The paper describes approximate methods of treatment of first order aberrations of an optical system. Aberration defects are expressed as lateral aberrations. The aberration defects of each surface are expressed in terms of the constants of the surface and the perpendicular distance of the ray from the center of the surface. The value of the perpendicular may be expressed in terms of co-ordinates of the ray in any chosen medium, and the aberrations for all the surfaces may be summed.

Generalization of the Problem of the Rotation of Prisms Producing Constant Deviation by two Refractions and one Internal Reflection H. Scudder Uhler

Astrophys. J., March, 1918, p. 65

The deviation of prisms of this type is usually  $90^\circ$ , or equal to the angle of the prism. The author finds that theorems as to constant deviation and position of the axis of rotation of the prism for this particular case hold when the angle of the prism is not  $90^\circ$ , but has any arbitrary value.

Note on the Use of Approximate Methods in Obtaining Constructional Data for Telescope Objectives T. Smith

Proc. Phys. Soc., Feb. 15, 1918, p. 119

Shows why satisfactory telescope objectives are obtained by neglecting thickness and solving for freedom from first order aberrations. Introduction of thickness without alteration of curvatures yields correction for aberration for a zone which is a constant fraction of the full aperture. In objectives of the usual type this zone is approximately the one that would be selected to balance first and second order aberrations. It follows that objectives calculated from first order formulæ, neglecting thickness, do not require trigonometrical correction unless the conditions are very abnormal.

On a New Stellar Photometer M. Maggini

Comptes Rendus, 1918, p. 284

The paper describes the construction and use of a simple photometer for variable star work. A plane parallel glass is set at  $45^\circ$  in the ocular of the telescope. On this plate is a small silvered spot the illumination of which may be controlled until the extra focal image of the star is of equal brightness.

## General and Inorganic Chemistry

### Modern Methods of Coal Storage

C. F. Zimmer

J. Soc. Chem. Ind., 1918, p. 81 A

The Bureau of Mines found that coal stored for two years in fresh water lost nothing in calorific value; in salt water, 0.395%; indoors exposed to air, 0.383%; outdoors uncovered, 0.907%. Storing under water is probably the most expensive method, but proves in the end the most economical.

### Platinum Scraps

J. Ind. Eng. Chem., 1918, p. 336

Mainly excerpts from jewelers' publications, in regard to the platinum situation.

### Permanence as an Ideal of Research

S. R. Scholes

J. Ind. Eng. Chem., 1918, p. 390

The importance of finding means of increasing the permanency of things such as steel, wood, cements, dyes, fabrics, paper and glass is emphasized.

### Acid-Resisting Iron and Its Use in Chemical Plant

S. J. Tungay

J. Soc. Chem. Ind., 1918, p. 87 T

Tables are given showing the resistance of alloys of silicon and iron to the corrosive action of sulphuric, nitric and hydrochloric acids. These tables show that less than 12% silicon does not give a satisfactory protection. Above 19% the protection begins to decrease. Serious difficulties have been encountered in the manufacture of castings, the separation of eutectics of phosphorus and silicon and the excessive shrinkage of the castings. "Cast iron shrinks about 3/32" of an inch per linear foot, while acid resisting iron is about 9/32." The tensile strength of these alloys is less than that of cast iron and an internal pressure higher than 50 lbs. per square inch is considered unsafe, unless the apparatus is very small. Under present day conditions these alloys are of very great advantage because apparatus made of them can be obtained more quickly than that made of pottery.

### The Testing of China Clay

E. R. Darling

Paper, April 10, 1918, p. 20

Gives methods for color, grit and feel, moisture, calcium, sulfates and iron.

## Analytical Chemistry

### Determination of Nitrogen in Rubber

M. Howie

J. Soc. Chem. Ind., 1918, p. 85 T

It is not necessary to digest the sample with sulphuric acid until colorless; three to four hours' heating is enough.

### Suggestions on Some Common Precipitations

G. H. Brother

J. Ind. Eng. Chem., 1918, p. 129

Highly retentive filter papers which filter slowly are not necessary for the following precipitates, viz., barium sulfate, calcium oxalate, ammonium phosphomolybdate and magnesium ammoniumphosphate, provides that the technique outlined for each case is observed.

**Titration of Iodine with Thiosulfate****R. Kempf**

J. Chem. Soc., 1917, p. ii. 502

It is important to avoid the use of an excess of mineral acids.

**Titration of Carbonic Acid and its Salts****J. N. Kolthoff**

J. Chem. Soc., 1917, p. ii. 506.

Carbon dioxide in potable water can be estimated by titrating 100 cc. with N/10 alkali hydroxide and two drops of 1% phenolphthalein as indicator. The reaction is complete when the rose-red color persists for five minutes. Alkali carbonate can be accurately titrated to alkali hydrogen carbonate by adding 10 cc. of neutral glycerine to 25 cc. of the liquid, and one drop of phenolphthalein as indicator. Standard acid is then slowly added until the color is discharged.

**Detection of Small Quantities of Glycerine****H. Wolff**

J. Chem. Soc., 1917, p. ii. 512

Glycerine is differentiated from ethylene glycol, which may behave similarly to glycerine in Denigès' reaction, by means of the refractometer.

**The Colorimetric Estimation of Iron****E. R. Dovey**

Analyst, 1918, p. 31

To avoid errors in the thiocyanate process in comparison between the standard and sample due to differences in composition of the liquids, the author divides the liquid to be tested, after adding the thiocyanate, between two Nessler tubes, placing two thirds in one tube and the remainder in the other. The standard iron solution is then added to the smaller portion until the tints in both tubes are equivalent.

**Note on Increasing the Delicacy of Delivery of Burettes****E. H. Merritt**

Analyst, 1918, p. 138

The delivery jet of the burette is waxed both inside and outside.

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## Photochemistry

**Dynamical Aspects of  
Photosynthesis****W. J. V. Osterhout and A. R. C. Haas**

Proc. Nat. Acad. Sci., 1918, p. 85

A study of the Kinetics of photosynthesis in *Ulva Rigida* (sea lettuce). It is found that after keeping in dark photosynthesis starts immediately on exposure to sunlight. The rate of action steadily increases till a constant speed is attained. This may be explained by assuming that sunlight decomposes a substance whose products catalyze photosynthesis or enter directly into the reaction. A mathematical exposition of these hypotheses is given.

**Application of the Quantum Hypothesis to  
Photochemistry**

E. Warburg

J. Chem. Soc., Abst., 1918 (ii) p. 113

It is considered unlikely that photochemical processes involve separation of electrons because gases in photochemical change do not conduct. Primary and secondary photochemical processes are distinguished; the chemical change caused by an absorption of radiation equivalent to one gram-calorie is termed the "specific photochemical effect". The hypothesis that photochemical absorption occurs by quanta involves concentration of the effect on relatively few molecules, and also agrees with the greater activity of the shorter wave lengths.

**Ultra-Violet Light: Its Application  
in Chemical Arts. Part 12**

C. Ellis and A. A. Wells

Chem. Eng., 1918, p. 181

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**Colloid Chemistry****Ultramicroscopic Investigation of the  
Tanning Process in Jellies**

W. Moeller 1421

Chem. Abst., 1918, p. 870

A further description is given of the conditions of formation of laminated structures in the action of aq. solns. on jellies. The formation of an insol. salt by the interaction of an electrolyte in the aq. soln. and a second electrolyte in the jelly is not an essential condition in the production of such structures. It has been found that an aq. soln. of  $\text{AgNO}_3$ , when left in contact with a gelatine jelly containing no added electrolyte, gives rise to the formation of alternating layers. This can not be attributed to the presence of small quantities of chlorides and phosphates in the jelly, for the same result is obtained when pure gelatine is used. The laminated structure would indeed seem to be produced when any ionizable salt diffuses into a jelly. The same heterogeneous structure results when gelatin jellies are subjected to the actions of tanning solutions. The laminated structure produced under specified conditions are illustrated by photographs and described in detail. It is considered that the ultramicroscopic observations can not be interpreted satisfactorily in terms of the hypotheses which have been previously put forward, and that the rhythmic lamination can only be accounted for in terms of the structure of the jelly. The author's view that gelatin consists of a fibrillated substance (alpha gelatin) the spaces between the fibrils being filled structureless substance (beta gelatin), is made the basis of an explanation of the rhythmic effects which are the result of the diffusion processes which occur when jellies are brought into contact with solutions of salts.

**Vulcanization Without Sulphur**

Ostromyslenski

Chem. Weekblad., March 2, 1918, p. 257

Quantitative investigations on vulcanization without sulphur whereby the action of catalysts and the properties of the final product are determined by quantitative methods.

## Organic Chemistry

- A Reinvestigation of the Cellulose-Dextrose Relationship M. Cunningham 1411

Trans. Chem. Soc., 1918, p. 173

Willstätter and Zechmeister claimed, from optical rotation and reducing power measurements, that cellulose is quantitatively converted into dextrose on treatment with 40% hydrochloric acid. This is found not to be the case; although the figures obtained for these non-specific properties agree closely with those for dextrose, chemical examination reveals the presence of a variety of products of undetermined constitution.

- Esparto Cellulose and the Problems of Constitution C. F. Cross and E. J. Bevan 1411

Trans. Chem. Soc., 1918, p. 182

A comparison of the properties of a typical cereal cellulose with those of cotton cellulose. A notable difference is the high proportion of furfuroids in esparto cellulose. Treatment with acid reagents, such as acetylation or digestion with 73% sulphuric acid, lowers the yield of furfural obtainable on boiling with hydrochloric acid. It thus appears doubtful whether the furfural in this reaction is produced from pentosans.

- Gelatine Factory J. Soc. Chem. Ind., 1918, p. 74 R 1421

Arrangements are being completed at Botany, Australia, for the immediate erection of a large works for the manufacture of gelatine, glue and size.

- The Constitution of the Disaccharides W. N. Haworth and G. C. Leitch  
Trans. Chem. Soc., 1918, p. 188

The constitution of lactose has now been definitely settled by isolating the products of hydrolysis of heptamethyl methylactoside, and the position of the galactose residue in the glucose grouping determined. The constitution of melibiose is inferred from the preceding. An interesting point brought out is that the same trimethylglucose is produced as that which was isolated from the hydrolysis products of completely methylated cellulose.

- Toluol from Spruce Turpentine A. S. Wheeler  
J. Ind. Eng. Chem., 1918, p. 359

Pure cymene, prepared from spruce turpentine, yields toluene and cumene on heating with benzene using aluminium chloride as a catalyst. The cumene may be employed for the manufacture of benzoic acid.

- Stable Starch Solution Pollitz  
J. Chem. Soc. Abst., 1917, (ii) p. 499

The addition of a very small quantity of an alkali, e.g., sodium hydroxide, prevents the bacterial decomposition of starch solution; the quantity of alkali necessary is too small to have any influence when the starch solution is used as an indicator in iodometric titrations.

## From Eastman Kodak Research Laboratory

The Iodide Titration of Silver Nitrate with  
Palladiou Nitrate as the Indicator

Louis Schneider

J. Am. Chem. Soc., April, 1918, p. 583

Communication No. 59

This new method is especially adapted for the accurate determination of very small amounts of silver, and overcomes the effect of those metals that usually interfere with the Volhard Method. The method consists of the titration of silver nitrate with potassium iodide in the presence of a very small amount of palladiou nitrate. The silver nitrate is precipitated by the potassium iodide and the slightest excess of potassium iodide is converted by the palladiou nitrate to palladiou iodide which is strongly colored.

In applying the palladium indicator, it was found necessary to employ a protective colloid such as gum arabic to prevent the occlusion of silver nitrate or potassium iodide in tenth normal titrations, and, in very dilute solutions, in order to obtain a precise colorimetric comparison in determining the end point.

The errors of the method are discussed; these may be avoided by adherence to the recommended method of procedure. An accuracy of 0.1% is easily obtained.

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## Books

### Recent accession to the Library:

An Introduction to the Study of Organic Chemistry

H. T. Clarke

A straightforward account of the salient features of the subject without unnecessary digressions, and, at the same time, facts enough to emphasize the symmetry and homogeneity of this branch of chemistry.

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## Patent Abstracts

### U. S. Patents

1260570

C. F. Pease, Assigned to C. F. Pease Co.

D1313

A System for Coating and Drying Blueprint Paper. The coated paper first passes through a chamber where it meets warm products of combustion from gas burners and then travels in a zigzag path through a hot air cabinet.

1264004

Howard Thomas Brown

K07

A Process for Making Color Half-tones involving considerable skilled handwork.

1261542

F. E. Ives

K265

A Plate Pack for Three-color Photography, comprising a green sensitive flexible film sandwiched between two inwardly facing blue sensitive and red sensitive glass plates. The blue sensitive emulsion is coated with tartrazine, which is designed to equalize the action of the light over all portions of the plate, act as a color screen for the rest of the pack and reduce the speed of the blue sensitive plate relative to the others.

1261800

H. R. Evans, K/23

A Two-color Motion Picture Projecting Apparatus in which red and green views are simultaneously displayed before two adjacent gates, the light rays from such gates being directed by double reflection prisms to a pair of lenses to throw superimposed images upon the screen. The film is advanced to the extent of one picture space at each cycle and consequently each picture is projected once at each gate.

1262954

F. E. Ives K32/23

A Projector for Motion Pictures in Natural Colors in which two complementary colored picture areas are arranged transversely beside each other on the film. The pictures are projected through separate paths through reflecting prisms and finally thrown in a common registering path upon the screen.

1260324

J. G. Capstaff, Assigned to E. K. Co. K/48 0642

A Method of Printing on Film, Coated on Both Sides. By using an emulsion which absorbs violet and ultra-violet light and printing only with such light none of the rays pass through one sensitive layer to injuriously affect the other.

1263962

J. E. Thornton, Assigned to J. Owden O'Brien K/88

A Paper for use in the Direct Reproduction of Color Transparencies. The paper has a printing surface comprised of a finely sub-divided colloid in different colors. It may be prepared sensitized or may be sensitized immediately before use by the photographer. Development is made from the back after transfer, as in the carbon process.

1260682

C. W. Kanolt 034-2109

A Photographic Method and Apparatus. A screen is placed in front of the plate, the plate being shifted laterally with respect to the screen during the exposure. When a suitable positive is made and moved behind a similar screen an effect of motion is produced.

1263355

P. Artigue 062

Apparatus for Taking Motion Pictures comprising a translucent background upon which shadowgraphs are thrown from the rear and photographs taken of the shadowgraphs and the background.

1260393

E. Keen, Assigned to W. P. Dunham 0631

An Apparatus for Producing Motion Picture Drawings or Cartoons. A set of transparent films, each bearing an element of the picture, are superposed and retained in adjusted position, the elements coalescing to form a picture, which is formed onto a negative film. The positions of different elements are then readjusted and another picture taken on a fresh area of negative film. By repeating this method motion pictures are produced.

1261648

P. H. Terry 0631

A Method of Making Motion Picture Films. The stationary elements of a series of pictures are first photographed upon the film and then a series of representations of the moving elements in successive positions are taken, the portions of the film containing the imprint of the stationary elements being masked during the photographing of the moving elements.

1262590

R. C. Newhouse 067

A Process of Projecting Motion Pictures in which an intermittent light source comprising an alternating current arc is used. The film is fed and the shutter operated by a synchronous motor connected with the same power source as the lights. The apparatus is so designed that shadow travel on the screen is avoided. A pair of lights may be used, if desired, the shutter cutting in one at the same time it cuts out the other, this taking place during a dark interval of the lights.

1260337

(See 1260338)

R. M. Craig 069-323

A Motion Picture Film, bearing sound records on one face and motion pictures on the other. The sound records consist of transverse lines composed of thin layers which are opaque to infra-red rays, but transparent to the visual projecting light. Infra-red rays are directed through the moving film toward a selenium transmitter which is connected with a "loud-speaking" 'phone behind the screen. The motion picture images are transparent to infra-red rays and do not interfere with the sound reproduction. Conversely the sound records, being transparent to the projection light, do not interfere with the exhibition of motion pictures.

1260338

(See 1260337)

R. M. Craig 069-323

A Combined Motion Picture Apparatus and Sound Reproducer. A special film bears both pictures and sound records. The latter co-operate with a beam of light to operate a selenium transmitter connected with a "loud-speaking" 'phone behind the screen.

1261272

E.W. Myers, Assigned to Masteroll  
Perforating Mach. Co. 069-323

An Apparatus for Synchronizing Music and Motion Pictures. An electrical switch is driven by the motion picture apparatus to flash a light to the musician at proper intervals, marks on the moving roll of music corresponding to such flashes.

1261979

T. T. Tuttle 1212

A Motion Picture Film, the edges of which are reinforced adjacent the perforations. The edges are softened by cement, and fabric cut on the bias is stuck to them.

1261344

H. O. V. Bergström 1511

Distilling Pyrolignious Acid. The characteristic feature is the carrying out of the process under pressure, say 2-4 atmospheres. The pyrolignious acid vapor is passed through crude pyrolignious acid (deprived of spirit) to remove tarry constituents before being absorbed by lime, then giving a purer product. Acetate solution is used for slacking the lime. (Met. & Chem. Eng., 1918, p. 483).

1260977

A. Helbronner and G. E. Criquebeuf 1516

The Manufacture of Esters, in particular of methyl acetate, by direct treatment of crude pyroligneous acid (very dilute acetic acid) with methyl alcohol and a catalyst such as sulphuric acid. It is claimed that the reaction proceeds quantitatively. The crude product, containing, in addition to methyl acetate, some acetone and methyl alcohol, is stated to be an excellent solvent for cellulose acetate and other materials.

- 1262347 H. L. Ide, Assigned  $\frac{1}{2}$  to Roy W. Ide 2102

A combined Focusing Lens and Diaphragm Structure. The lens is of the type in which the screwing out of the front positive lens cell changes the separation of the lens elements and thereby alters the focal length. The lens cell is connected with the actuating lever of the iris diaphragm so that for each stop there will be a definite focal length, the camera being focused on near objects when the lens is wide open.

- 1262700 W. A. Riddell, Assigned to E. K. Co. 2102

A Lock for Focusing and Adjusting the Lens Carriage of a Folding Camera. Telescoping, tubular members are pressed by the fingers and actuate through a cam, the clamps and locks.

- 1262677 R. Kroedel, Assigned to E. K. Co. 2103

A Folding Camera in which the foot of the lens carriage slides in the usual tracks. When the carriage is pushed back into the body of the camera, two pinlets project from it into the tracks on the folding bed and insure proper alignment when the bed is again unfolded.

- 1263684 R. W. Leach 2106

A Removable and Collapsible Focusing Hood for attachment to cameras.

- 1261919 H. Gindele 2106

A Collapsible Folding Hood adapted to be connected to the ground glass frame of revolving back plate cameras.

- 1260356 W. F. Folmer, Assigned to E. K. Co. 219

A Roll Film Camera of the meter-reading type in which the shutter is locked after making an exposure until a fresh section of film is wound into place. Film cannot be wasted, because the winding mechanism remains locked, after a fresh area of film is wound, until the shutter is actuated to expose that area. There is a special measuring roll which stops the winding operation after a correct length of film is drawn over it. It comprises spurred sections at its ends to insure non-slipping contact with the edges of the film and an idler portion in between. When the film is threaded into the camera, a narrow portion thereof engages only the idler portion and so the measuring roll is unaffected during the threading operation. The rear end of the film is likewise narrow, so that the measuring roller will be unaffected after all of the normal width picture areas of the film have been exposed. Thus double exposure wasting of film and the making of unproductive exposures are all eliminated.

- 1260357 W. F. Folmer, Assigned to E. K. Co. 219

A Photographic Film Strip having relatively narrowed portions near its front and rear ends adapting it to cooperate with the special measuring roll of the apparatus shown in patent 1260356.

- 1263018 A. Barbee 2132

An Attachment for the Box Camera, having a shutter lever projecting from the wall to cover and protect the lever from accidental movement.

1260898 A. L. Harrell 215

A Roll Film Camera provided with devices to facilitate the use of smaller sized film than the camera was designed for. It includes masks for restricting the size of the exposure area and U-shaped frames with auxiliary spool centers which fit into the film chambers.

1263228 J. Goddard and W. S. Hutchings 115  
Assigned to Seneca Camera Mfg. Co.

A Roll Film Camera in which the compartments for the spools have grooves into which the ends of the spools slide. The separate back of the camera has projections which enter these grooves and hold the spools in place therein.

1263619 E. M. Stanley 215

A construction of Roll Film Camera in which the usual roll films may be used. The camera is provided with curtains or shutters, permitting the exposure of only part of the usual picture area, so that pictures of different sizes may be made upon the same film. An elongated slot in the camera back with a scale permits the use of the regular identification numbers.

1263588 R. Miyake and T. Yoshida 2151

A Roll Film Camera in which the films are carried in an adapter which may be placed in and removed from the camera as a unit, thus permitting the use of a focusing screen between exposures. A slide covers the front of the adapter, so that it can be taken from the camera.

1262657 T. W. Ford 2152

A Double Exposure Prevention Device which is operated by the actuation of the shutter to show a signal and to prevent further actuation of the shutter until the spool has been turned. The turning of the spool restores the signal and permits further operation of the lever.

1260415 G. R. McAllaster 2153

A Roll Film Camera provided with devices for light-printing spots upon the film for identifying the different picture areas. There is an opening in the camera back, opposite to which is a yielding support in the camera body. The operator presses a sharp instrument through the backing paper and the light entering the perforation fogs a small circular area of the film. By making the number of fogged areas equal to the number of the pictures (five spots for the fifth picture for instance) the photographer can identify any particular view after development.

1263904 R. Kroedel, Assigned to E. K. Co. 2155

A Removable Back for Roll Film Cameras. The ends of the back extend around the film spool compartments and are connected by telescoping parts. One end is extended and the back is thus easily removed.

1261926 J. S. Greene, Assigned to Commercial Camera Co. 2172

A Commercial Photographic Copying Apparatus of the type in which a web of paper is exposed, severed and developed. The exposed section of paper is conducted into the developing bath beneath curved guides which direct it towards the bottom. It is then moved rearwardly by means of rotary paddles which bring it beneath the floating pile of previously developed prints.

1262180 F. E. Davies 221

A Method of Projecting Sketches upon a screen as the same are drawn or painted. A lantern slide comprising a perforated grid is employed, the pictures being formed by painting out or blotting the perforations.

1260462 F. Schwanhausser 2235

A Stereopticon provided with mechanism for automatically exhibiting a series of lantern slides. The latter are carried in pivoted frames near the peripheries of two rotary wheels which move intermittently past the exhibiting position, the slide-bearing frames being swung during the period of rest into the exhibiting position.

1260673 W. L. Isbills 2235

A Lantern of the reflecting or opaque projection type in which a series of carriers on an endless belt transport successive post cards into projection position. Special rollers also provide for the exhibition of panoramic strips.

1262578 J. A. Cameron 2235

A Stereopticon in which the views are carried upon a film instead of lantern slides. The film is advanced step by step, an electric switch automatically turning off the projecting light during the periods of movement of the film.

1263753 C. V. Estey and A. B. Cudney 231-2626

A Flash Light Apparatus which automatically trips the shutter of the camera. A flash powder is placed in a box and in exploding, lifts a cover operating a lever, which presses a cable release to actuate the shutter. (Apparently the shutter would not be actuated until the flash was over).

1262723 H. M. Webster 241

A Photographic Printing Apparatus for Professional use. The negative and paper are placed upon a glass table, which is thrust forward in a printing position. This turns on the lights and starts a motor, which lifts a weight a predetermined distance and the lights are then extinguished, insuring uniform exposure for each print.

1260908 J. S. Kaufman, Assigned to Alliance Co. 2626

A Device for Releasing the Shutter after a definite time interval in order to enable the photographer to include himself in the picture. It comprises a spring actuated plunger with a pneumatic control. The apparatus screws into a special opening in the shutter casing.

1262388 H. F. Perfontaine 2626

An Attachment for Cameras of the box type by means of which an operator may actuate the shutter from a distance, thereby including himself in the picture. It is actuated by cords which move a double lever connected by a link to a sliding bar engaging the shutter lever.

1263223 A. Freeman 264

A Device for determining the amount of rise that should be given to a camera front. It consists of an attachment for the camera comprising a pivoted, weighted pointer. The camera is pointed at an object and an angle to which it must be inclined to bring the object clearly within the field is shown by the pointer. The camera is then leveled and the front raised according to a scale calibrated by the pointer scale.

- 1261643 C. H. Stout, Assigned to Crown Optical Co. 264  
A Pivoted Folding Direct Vision View Finder of simple structure in which the lens is held in place in a U-shaped channel support containing bowed springs.
- 1260596 E. E. Thracher 2652  
A Plate Magazine which enables the photographer to carry in small bulk a large number of plates. By means of an auxiliary holder one plate at a time can be transferred from the camera and there exposed, after which it may be replaced in the magazine, these operations being effected in daylight. The transfer of the plates from the magazine to the holder and vice versa is done by means of slides and an angularly moving plate feed.
- 1261747 A. W. McCurdy 2652  
A Roll Film Cartridge in which the gelatin backing of the film proper and both faces of the backing paper are waterproofed with a pyroxylin layer.
- 1261748 A. W. McCurdy 2653  
A Photographic Film Cartridge or Pack which is hermetically sealed by pasting waterproof strips, such as surgeon's tape, along the seams and joints of the cartridge or pack, the whole being then immersed, if desired, in a waterproofing pyroxylin bath.
- 1261946 J. E. Linden 2653  
A Sheet Metal Film Spool rolled up and formed from a single piece blank.
- 1263754 W. L. Farley, Assigned to E. K. Co. 2653  
A Photographic Roll Film Cartridge in which one end of the sensitive film is connected to the backing paper by a strip of relatively light material, the backing paper being provided with an extensible portion at a point opposite the connecting strip.
- 1260458 A. A. Ruttan, Assigned to E. K. Co. 2655  
A Photographic Film Pack having metallic strips which line the side walls to prevent distortion of the pack and consequent light leaks.
- 1262137 B. M. Takahashi 2672  
An Attachment to be placed over the lenses of cameras and having a hinged hood to protect the lens from light from any desired direction.
- 1262444 J. G. Capstaff, Assigned to E. K. Co. 2683  
An Actinometer of the "least visible tint" type, which is made direct reading, exposure data becoming visible during the operation of the device. A non-actinic window is provided for safe examination of the test strip. The apparatus is of compact book form.
- 1260737 E. E. White 269  
A Carrying Case for roll film cameras provided with a chamber for receiving extra film spools.
- 1260891 F. A. Gildersleeve and W. L. Trice 3101  
A Film Feeding Mechanism for motion picture cameras is reciprocated longitudinally of the film by means of a cam groove on the periphery of a rotary drum while the film-gripping claws are oscillated transversely of the film by means of cams on the end faces of the drum.

1262255 E. Rector 319

A Motion Picture Camera driven by a spring motor and adjustable to take one picture or a group of four pictures as well as a kinematic series. When a set of four pictures are taken, the diaphragm is changed to give four stops in succession, so that one of the series will have the correct exposure.

1261315 B. J. Such 3201

A Motion Picture Projector, the driving mechanism of which includes a notched disk and a clutch therefor, the object being to stop the film at intervals with the picture in frame so that the action on the screen may synchronize with a dialogue.

1262611 P. F. Krug 3202

A Motion Picture Projector in which the turning of a single key serves to open the gate and place loop-forming rolls in position for threading the film.

1262965 E. E. McVicker 3204

A Container for Motion Picture Film Rolls in which there is a pocket for the placing of transparencies to be used in advertising future performances.

1261029 E. B. Hulsey and J. A. D. Herrington 3209

Assigned  $\frac{1}{4}$  to Wiley A. Blair and  $\frac{1}{4}$  to G. H. Hill

A Motion Picture Projector in which, upon breaking of the film, the driving motor is stopped, the light "dowsed", an auxiliary light turned on for use when repairing the film and a friction brake automatically thrown in for a short interval to take up the momentum of the moving parts.

1261795 C. W. Ebeling 323

A Motion Picture Projector combined with a plurality of sound reproducers. The latter are driven directly from the former through clutches which are electro magnetically controlled from the film.

1261796 C. W. Ebeling 323

Mechanism particularly adapted for use in the synchronous reproduction of sound and pictures. It relates particularly to the mechanism for starting the rotation of a second sound record so that it will be at its maximum or desired speed and so that there will be no pause between the cessation of sound from one record and the beginning of the next.

1262511 T. D. Kelly 324

A Convex Projection Screen which may be pyramidal, frustroconical, etc. In one form of the apparatus the screen is viewed by reflection in a mirror.

1261886 G. Worthington 325

A Toy Motion Picture Apparatus in which the reflection of images upon the under side of an opaque film are viewed through perforations in the film, such perforations serving instead of a shutter.

1262105 J. D. Scott and E. C. VanAltena 327

Assigned to Scott & VanAltena, Inc.

A Motion Picture Apparatus which uses lantern slides in place of film, each slide carrying four pictures. The whole collection of slides are carried upon a rotary table which brings them successively to the exhibiting position where they are rotated step by step.

1262671 A. S. Howell, Assigned to Bell & Howell Co. 33

An Automatic Mechanism for stopping the operation of film perforators and similar apparatus when the spool of film is exhausted.

1260590 R. P. Stineman 34

A Motion Picture Contact Printing Machine in which the positive and negative films are conducted past the gate over a curved drum which insures proper contact.

1261865 W. J. Stange and L. M. Bannan, 34  
Assigned 1/3 to Rockwell L. Stone

A Motion Picture Printing Apparatus in which the intensity of the light is controlled by interposing screen units of known density between the source and the negative. The screen units are automatically moved into and out of position by means of pneumatically actuated mechanism which co-operates with perforations punched at intervals in the film in accordance with the density thereof.

1260595 F. B. Thompson 353

A Film Treating Apparatus of the continuous type in which the film passes from the fluid treating tanks over chamois rollers which remove the surface moisture and through a weighted loop which maintains the proper tension. It is from thence carried to the drying chamber.

1261797 C. W. Ebeling 366

A Governor Control Device for insuring uniform operation of hand operated motion picture projectors and cameras. If the operator turns the handle above the speed determined by the governor, the excess movement is not transmitted.

1261890 C. E. Akeley, Assigned to Akeley Camera, Inc. 366

A Spring Handle for Motion Picture Cameras and Projectors which prevents jars or lateral movements from affecting the camera or projector.

1262284 G. J. Teague, Assigned to Herbert S. Beckman 366

An Attachment for Motion Picture Cameras. It is a spring motor mechanism for driving the camera at an adjusted speed controlled by a centrifugal governor actuating a friction brake.

1259500 H. R. Evans 386

A Splicing Machine for Motion Picture Film. After the ends of the film are clamped into position, the operator has merely to press two handles rearward, whereupon the film ends are cut, scraped, cemented, overlapped and finally clamped until dry.

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## British Patents

112940 L. Maclaure and G. Gautier K/24

Color Cinematography. Cinematograph color record images are taken and projected through two screens colored in accordance with a tri-color system, and two screens complementary to them; the four images are taken and projected in successive pairs, each pair comprising complementary color records which are taken or projected simultaneously.

113156

F. Perkins 045

**Lantern Slides.** In lantern slides in which positive films are bound between pieces of glass or the like, the films consist of cinematograph film cuttings and are attached to one of the pieces of glass by strips of adhesive paper. The strips are double, and each comprises a lower layer adhesively fixed to the glass plate, and an upper layer secured at the top and bottom edges to the lower layer. The edges of the film cuttings are placed between the two layers, and the glass cover plate is bound in position by binding strips.

110776

C. Ellis 1511

**Production of Sulphuric Anhydride and Sulphuric Acid.** The use of a catalyst in the contact process consisting of chromium oxide and an oxide of heavy metal (lead, antimony, tin, or cadmium) capable of absorbing relatively large quantities of sulphur dioxide. (J. Soc. Dyers, 1918, p. 45)

113545

J. G. Torr 2612

**Tripod Stands.** The legs of tripods are held extended by arms pivoted to a central boss and to clips on the legs, the inner ends of the arms being locked by the head of a screw which screws into the boss. One or more of the arms may be extensible.

113590

A. Warmisham and Taylor, Taylor &amp; Hobson 2634

**Four-Lens Air-Space Anastigmats.** An improved photographic objective corrected for the usual aberrations, of the type consisting of four simple lenses separated from one another by air spaces, the two halves being unsymmetrical. The only novelty claimed for the invention is the placing of each component lens so that its shallower surface faces inward. Two examples are given, (1) a wide angle lens of speed  $f/4.5$ , constructed of dense barium crown for the positive elements and light flint for the negative elements; (2) a high speed lens of less covering power (probably computed especially for aerial photography) in which the negative elements of (1) are made of dense flint.

113266

Soc. d. Etab. Gaumont 3201

**Cinematograph Apparatus.** In a Geneva mechanism for cinematograph apparatus, the ratio of the time of movement of the star wheel to the time it is stationary is decreased by mounting the driving pin on a block which is constrained to slide in a slot in the driving disk as the disk is uniformly rotated.

113148

S. D. Williams 3204

**Cinematograph Apparatus.** A band or the like is wound on to and off a reel for a cinematograph film simultaneously with the film so as to preserve a space over the picture portion thereof. The band consists of longitudinal strips connected by cross bars, the cross bars being passed through incisions in the strips and then bent twice at right angles at each end which form distance pieces, which bear on the margins of the film and prevent the two layers of film coming in contact. Alternatively, two separate corrugated strips, each bearing on one margin of the film, may be employed.

113513

F. B. Dehn 34

**Cinematograph Apparatus** Cinematograph printing apparatus in which the film is moved continuously or intermittently, comprises feed and stop mechanism.

# Monthly ABSTRACT Bulletin



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# Monthly Abstract Bulletin

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## Errata

In the *Abstract Bulletin* for June, 1918:

Page 90, line 20, instead of: *Tijtschrift* read: *Tijdschrift*.

Page 93, line 40, instead of: *provides* read: *provided*.

Page 97, line 23, instead of: *disgressions* read: *digressions*.

# Photography

## A Model Dark Room

G

Studio Light, May, 1918, p. 3

A description of a dark room designed with a view to economy of space and convenience in working.

## Measuring the Action of Intensifiers: Stain in Negatives and Intensification

H2-016

B. J., 1918, p. 190

Editorial article on the paper by Nietz and Huse on the sensitometry of intensification.

## Processes of Making Color Screen Plates

K/33

B. J. Col. Sup., May 3, 1918, p. 18

Contains a useful summary of the various processes for making screen plates under the name of the patentee.

## Decennia Practica—Color Photography

K/45

B. J. Col. Sup., May 3, 1918, p. 18

Copying Autochromes and Making Subtractive Prints for Autochromes.

## After Work on the Print

G. C. Weston L4

B. J., 1918, p. 217

A demonstration at the Croydon Camera Club. The report contains a large amount of technical information from the demonstrator as to the methods used by him.

## The Fundamentals of Photography— Chapter III. Light and Shade

C. E. K. Mees 014

Kodakery, June, 1918, p. 18

Differences in brightness which occur in nature are produced by differences in the mode of lighting. Thus we have flat lighting, with slight differences in tone while with side lighting a larger number of tones are produced. The brightness of an object depends both on the intensity of the illumination falling on it and also on the reflecting power of the object itself. The ratio of the brightness of the lightest to the darkest part of the object is called the contrast. When photographing a flatly lighted subject, keep the exposure short and develop fully, while if the subject is very contrasty give a full exposure and develop for a shorter time.

## The Mechanism of the Development of the Image in a Dry Plate Negative

F. T. Krohn 017

Phot. J., 1918, p. 179

An account of experiments made at the Wealdstone factory between 1892 and 1901. The author describes the distribution of the image in a film for three different exposures: (a) an under-exposure (b) one in the period of correct exposure, and (c) a reversed exposure. Under the conditions of development used by him the lower particles of the emulsion in normal exposure are reduced to very fine silver, almost colloidal, probably owing to the exhaustion of the development in the upper layers of the film, so that these lowest particles are developed with a weakened and heavily restrained developer. In the measurement of H. and D. speeds the author found an

increase of the inertia with continued development, this increase becoming appreciable at development factors exceeding unity. The author has also observed that the silver bromide in emulsions is frequently crystalline, and seems to consider that the crystalline form of the emulsion is directly associated with the shape of the curve. He finds crystals in the form of flat hexagons. In reading the paper it should be borne in mind that the results found were dependent to a considerable extent upon the particular conditions of development employed. It is of interest to note that the cutting of sections through films, which has since been developed to so great an extent in our Research Laboratory, was successfully performed at Harrow twenty years ago.

**Artificial Light in the Motion Picture Studio** M. Mayer 061-232  
Mot. Pict. News, May 4, 1918, p. 2736

The author treats this important subject in a systematic manner, dealing with the nature and arrangement of the light sources, the concentration, reflection and diffusion of the light, and the installation of equipment.

**Offset Projection** W. C. Smith 067  
Mot. Pict. News, May 4, 1918, p. 2732

The author draws attention to the undesirable effects produced when the projecting is offset from the center of the screen. Although it is apparently possible to correct for the distortion and blurring produced by either changing the shape of the aperture plate or by tipping the screen so as to be normal to the projected beam, the best results are only obtained by placing the projecting machine as nearly as possible opposite the center of the screen.

**Stereoscopic Cinematography** A. S. Cory 068  
Mot. Pict. News, June 1, 1918, p. 3322

A review of the anaglyphic method of obtaining stereoscopic motion pictures. The author is of the opinion that until the necessity of using analyzers or viewing oculars can be eliminated, no process of stereoscopic cinematography will be a commercial success, and it is difficult to see how the viewing apparatus can be dispensed with in view of the accepted requirements of binocular vision and the stereoscopic process.

**Wild Bird Self Portraiture** H. T. Middleton 098  
Kodakery, May, 1918, p. 6

An article illustrated with a number of photographs obtained by means of a Premo camera fitted with a string attached at one end to the shutter and at the other to a suitable bait.

**Substitutes for Repeating Back** L. T. W. 2108  
B. J., 1918, p. 219

Correspondent describes method of making several distinct exposures on one plate by means of shields. Another correspondent describes the method used by him in cutting the shields.

**The Mounting of Condenser Lenses in Lanterns** 2233  
B. J., 1918, p. 202

Editorial article in which it is pointed out that there are much better devices for coupling condenser cells than the use of fine screw threads.

**Plate Marker for 3-on Postcard Strips** R. R. Rawkins 243  
B. J., 1918, p. 211

Simple arrangement of a cardboard plate marker which gives three impressions at once on a card strip  $10\frac{1}{2} \times 5\frac{1}{2}$ , thus enabling three post card sized prints to be made simultaneously.

B. J., 1918, p. 202

Mr. O. Hammer has published a volume with descriptions and enlarged photographs of the working mechanism of seventeen patterns of between-lens shutters on the American market, this having been compiled as an assistance to the overhauling and repair of these shutters.

Extracting Lens Cells

263

B. J., 1918, p. 198

In the English Mechanic, J. W. Banks recommends for extracting lens cells tongs made from a piece of round iron flattened for a few inches to form a bend of an elongated U, and suggests that a series of these should be kept together with a few thin metal linings in order to deal with cells of any size.

The B. & L. Vignetter for Cinematography

3107

Mot. Pict. News, April 20, 1918, p. 2436

A description of an iris diaphragm vignetter suitable for cinematographic work. The small opening which always remains in the center of a closed iris is covered at the proper instant by an extra wing which works in unison with the leaves of the diaphragm.

Some Considerations

L. C. Porter and W. M. States

3205

in the Application of Mazda Lamps to Projectors

Mot. Pict. News, 1918, May 11, p. 2874, and May 18, p. 3014

Optical Requirements of Motion Picture

A. S. Cory

3206

Projection Objectives

Mot. Pict. News, May 18, p. 3017 and May 25, p. 3162

An association has been formed under the name of "The British Scientific Instrument Research Association" to promote research and other scientific work in connection with the British optical and scientific instrument trade.

B. J., 1918, p. 204

The Kodak Park Works of the Eastman Kodak Company

A. S. Cory

Mot. Pict. News, June 8, 1918, p. 3471

A brief description of the plant and research laboratory.

Mr. R. Duehrkopp, the well-known professional photographer, died at Hamburg, on April 3d, 1918.

## Photo-Engraving

The Care of Engravings

07

Printing Art, June, 1918, p. 296

A note pointing out how easily half-tones are damaged, and recommending suitable cabinets of shallow drawers for storage.

To use Dried Albumen

07004-1573

Inland Printer, June, 1918, p. 329

Dissolve 80 grains in 1 oz. water with aid of pestle and mortar, add 10 drops of glacial acetic acid, stir well and filter. Then add ammonia drop by drop until litmus paper just turns blue.

## Aluminium Etching

S. H. Horgan 07006

Inland Printer, June, 1918, p. 329

A lithographer of Washington states that nitric acid etches aluminium very slowly, phosphoric acid makes a good etch, muriatic acid is better, but acetic acid and salt is best of all.

## Half-Tone Printing on Rough Stock

C. A. Stinson 07009

Inland Printer, June, 1918, p. 326

Paper must be uniform in thickness, ink with lots of color and not tacky, carefully made overlays and engravings etched deeply, particularly in middle tones.

## The Case of the Chicago Photo-Engravers

Inland Printer, June, 1918, p. 222

Reciting part of the argument against the complaint that Clause 10 in the agreement between masters and men is a violation of Federal Law.

## Training your Employees by Motion Pictures

E. A. Dench

Inland Printer, June, 1918, p. 317

A plea to printers to teach their salesmen and other employees by means of interesting motion pictures of technical operations. Many reels are available on loan without charge from the Bureau of Commercial Economics, Washington, D. C.

## Terms Used by Engravers

Inland Printer, June, 1918, p. 330

A glossary of some of the more usual terms.

## The One Best Way to Show Merchandise in Copy

Printers Ink, April 11, 1918, p. 8

A plea for experiment in finding out the best way to photograph goods so that their selling appeal is greatest. For example, it has been found that the best background for photographing lace is chocolate brown, the best size to photograph it is slightly reduced ( $1/5$  to  $1/6$ ), that watches look same size when slightly reduced ( $16$  to  $15$ ). Embroidery outlined with soft lead pencil will look better than elaborate retouching. A suggestive article.

## Physics

## The Behavior of

H. J. Channon, F. F. Renwick and B. V. Storr

## Scattering Media in Fully Diffused Light

Phot. J., March, 1918, p. 121

This paper contains a very complete and elaborate mathematical treatment of laws of reflection, transmission, and absorption of diffuse radiation by a diffusing medium. As a basis for the theoretical treatment five terms, "transmittance", "rejectance", "obstructance", "contendence" and "selectance" are defined. A basic equation,  $C = I_0(1-R)/I_t$ , relating these terms is given and serves as the foundation upon which the subsequent theoretical treatment is developed. Considerable space

is devoted to the correlation of these various terms and their relations to the thickness and diffusion characteristic of the medium considered. Following the theoretical treatment are given experimental data which confirm the theoretical conclusions and also show that within certain limits the empirical formula,  $D = at^b$ , previously published by Renwick and Bloch, very exactly represents the facts. The paper constituted a valuable contribution to the subject of the photometry of diffuse light.

An "Average Eye" for E. C. Crittenden and F. K. Richtmyer  
Heterochromatic Photometry, and a Comparison  
of a Flicker and an Equality-of-Brightness Photometer  
Bull. Bur. Stds., April 6, 1918, p. 87

An investigation undertaken in connection with the committee on research of the Illuminating Engineering Society. An important paper difficult to summarize. One hundred and fifteen observers took part in determining the "average eye", which was found to be 0.99 of that defined by Ives and Kingsbury. The superiority of the flicker over the equality-of-brightness photometer in heterochromatic photometry is demonstrated.

The Resolution of Mixed Colors by H. E. Ives  
Differential Visual Diffusivity  
Phil. Mag., 1918, p. 413

The writer has succeeded in decomposing a mixed yellow into its red and green components by a rapid oscillatory movement of the color. Monochromatic yellow can not thus be decomposed. This leads the author to the conclusion that different colors are transmitted to the brain with different velocities, and supports Houstoun's theory of color vision. There are, however, grave objections which the author points out.

Light and Vision. The Physiology of the Retina W. M. Bayliss  
Electrician, May 3, 1918, p. 10

An abstract of a lecture before the Illuminating Engineering Society. General survey of work to present time. Curves of minimum energy to excite sensation of sight and curves of absorption by the visual purple show similarity. Data on growth and decay of retinal current are given.

Emissivity of Straight and Helical W. W. Coblentz  
Filaments of Tungsten  
Bull. Bur. Stds., April 6, 1918, p. 115

It is shown that the emissivity of tungsten can not be represented by any equation of the Wien type. The author finds that the inside of helical tungsten wire is 90% brighter than the outside. The cause of this difference is found to be internal reflection, and not increased temperature.

On the Scattering of Light by a Cloud of Similar Small Rayleigh  
Particles of any Shape and Oriented at Random  
Phil. Mag., 1918, p. 373

With a cloud of spherical particles scattering light, polarization should be complete. The present investigation is an attempt to explain lack of completeness of polarization by assuming a cloud of elongated particles. Values of the three components are obtained for various assumptions as to the shape of the particles.

On the Scattering of Light by Spherical Shells, and by  
Complete Spheres of Periodic Structure, when the  
Refractivity is Small

Rayleigh

Proc. Roy. Soc., April 2, 1918, p. 296

A theoretical paper dealing with the scattering of light from small spheres and spherical shells whose refractive index may be either constant or periodically variable along the radius. An explanation of the variable colors, changing with angle of observation, so frequently seen in beetles, butterflies and feathers is advanced.

Some Problems in the Theory of Radiation

A. Schuster

Proc. Roy. Soc., April 2, 1918, p. 281

A theoretical treatment of some problems in absorption and radiation.

Note on Fox Talbot's Method of Obtaining  
Colored Flames of Great Intensity

G. A. Hemsalech

Phil. Mag., 1918, p. 382

Colored flames of great intensity can be obtained by blowing a stream of oxygen against a salt placed on the wick of a spirit lamp. Various modifications of this method of Talbot's are tried by the author, who shows that the effect is a temperature one, due to increased rate of combustion in the flame.

Molecular Frequency and Molecular Number

H. S. Allen

Phil. Mag., 1918, p. 404

A study of this subject, based on residual rays formed by repeated reflection from the surfaces of solids, along lines of previous papers by the author. He concludes that atomic forces are of the same nature as molecular forces, and that both are discrete, or multiples of primary forces, suggesting that Faraday's force tubes have a physical existence.

The Absorption of the Radiation Emitted by a Palladium  
Anticathode in Rhodium, Palladium and Silver

E. A. Owen

Proc. Roy. Soc., May, 1918, p. 339

In this work an attempt was made to obtain a knowledge of the general radiation from an x-ray tube by studying the absorption coefficients of the rays in rhodium, palladium and silver. Relation between wave-length and absorption coefficient is expressed by the relation, fluorescent coefficient divided by (wave length)<sup>3</sup> is a constant for a given substance over the range between the absorption bands of the substance.

Photo-Electric Action of X-Rays

O. W. Richardson

Proc. Roy. Soc., April 2, 1918, p. 269

In this paper the author presents evidence in support of the validity (in x-rays region) of Einstein's equation of photo-electrical activity.

The Intensifying Screen; Its Properties and Uses

T. Thorne Baker

Arch. Radiol., April, 1918, p. 352

General discussion of different types of screens.

- A Consideration of the Various Methods now Available for Heating the Filament of a Coolidge Tube F. Hernaman-Johnson

Arch. Radiol., May, 1918, p. 365

Discussion of: 1. High tension transformer excited by alternating current main. 2. Coil outfit; alternating supply; motor generator to feed the coil with direct current. 3. High tension transformer; rotary converter; direct current main. 4. Coil; interrupter; direct current main.

- A Screen for Radioscopy Charlier

Arch. Radiol., May, 1918, p. 394

The active surface is covered over with a thick anti-X glass; the other side is lined with aluminum of .5 mm. thickness. This cuts out the soft rays, preserves the screen from shocks, from soiling by blood, discharges, etc.

## General and Inorganic Chemistry

- Stellite E. Haynes

Met. Chem. Eng., May 15, 1918, p. 541

An alloy of cobalt, chromium and tungsten or molybdenum. It is harder than steel and will retain a cutting edge.

- Washing in Filter Presses D. R. Sperry

Met. Chem. Eng., May 15, 1918, p. 520

Describes simple washing in the plate type of press. Drawings are given.

- Attempts to Produce Silver Arsenide by Reduction of Silver Arsenate with Formaldehyde E. V. Zappi and J. J. Landaburn

Chem. Abst., 1918, p. 886

A mixture of silver and silver arsenate having the approximate composition  $\text{Ag}_2\text{AsO}_4$  was generally obtained, and the formation of silver arsenide was not observed in any instance.

## Analytical Chemistry

- The Estimation of Potash B. Blount

Analyst, 1918, p. 117

The author describes the method used in his laboratory for estimating potash directly and soda by difference in siliceous rocks, clays, etc.

- Reports of Committees of the Amer. Chem. Soc. on Standard Methods of Analysis

Proc. Amer. Chem. Soc., May, 1918, pp. 62, 64, 65

References are given to the complete reports on coal analysis and fertilizers and incomplete reports on methods for other materials.

Report of Committee of Amer. Chem. Soc. on Analyzed Reagents  
Proc. Amer. Chem. Soc., May, 1918, p. 65

Results of the analysis of 26 reagents are tabulated.

Improved Methods for the Estimation of Sodium and Potassium S. N. Ruhe  
J. Ind. Eng. Chem., 1918, p. 429

A careful investigation of the sources of errors in ordinary methods with procedures for overcoming these errors.

The Preparation of Hundredth Normal Permanganate Solutions J. O. Halverson and O. Bergeim  
J. Ind. Eng. Chem., 1918, p. 119

The preparation of dilute permanganate solutions by direct dilution is inaccurate and inconvenient. By means of the procedure outlined in this paper N/100 potassium permanganate solutions may be prepared which will retain their strength for an indefinite period.

The Sensitiveness of Living Organisms to Very Small Quantities of Chemical Substances H. J. Hamburger  
Chem. Weekblad, April 13, 1918, p. 445

The author calls attention to the extreme sensitiveness of certain biochemical reactions. For instance, bacterium termo is affected by 1/100000000th milligram of oxygen. Lactic bacteria are sensitive to 1/10000000th milligram of vanadium per liter. Spirogyra are killed by 1/10000000th milligram of copper per liter. Several other sensitive reactions are quoted especially in regard to protein chemical problems. It is thus possible to detect minute traces of chemical substances where chemical and physical methods fail.

## Colloid Chemistry

Adsorption Compounds and Adsorption. III L. Berczeller and St. Hetényi  
J. Chem. Soc. Abst., 1918, ii, p. 99

On the influence of alcohols on adsorption of certain substances.

Anisotropic Colloidal Solutions W. Reinders  
J. Chem. Soc. Abst., 1918, ii, p. 101

Evidence that the bi-refringence of vanadium pentoxide hydrosols depends upon the crystalline character of the ultra-microns.

Gliding Dialysis. II H. Thoms  
J. Chem. Soc. Abst., 1918, ii, p. 99

Colloidal Nature of the  $\gamma$ -Alkali Resin Soaps L. Paul  
J. Chem. Soc. Abst., ii, 1918, p. 100

- Improved Coating and Filler for Paper W. N. Kohlins  
Paper, May 8, 1918, p. 23

Description (Pat. 1261135) of gums, dextrin, etc., for deflocculating or peptizing "satin white" and similar fillers.

- Retardation of the Formation of Prussian Blue and J. Reitstötter  
other Reactions in Aluminum Hydroxide Sols.  
J. Chem. Soc. Abst., 1918, p. 102

- Coagulation and the Attraction of Particles R. Zsigmondy  
J. Chem. Soc. Abst., ii, 1918, p. 101  
Studies with colloidal gold sols.

- Kinetics of the Reactions in the Formation and L. Berczeller  
Flocculation of Colloidal Solutions  
J. Chem. Soc. Abst., ii, 1918, p. 101

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## Organic Chemistry

- Fiber Board; Effect of Varying O. Kress and G. C. McNaughton  
Humidities on the Strength  
of Fiber Board and its Component Plies  
Paper, May 22, 1918, p. 11

Tables and charts are given. (For the design and operation of a constant humidity room, see Paper, Vol. XIX, No. 25, p. 13, O. Kress and P. Silverstein.)

- Research Work on the Sizing of Paper F. C. Clark and A. G. Durgin  
Paper, May 15, 1918, p. 11

A general investigation of rosin sizing including valuation of rosin, preparation of soap, sizing of sheet and effects of size on the fibers. Three different types of size are used, high free rosin size, medium free rosin size and a neutral soap.

- The California Kelp Operations of the Hercules Powder Company  
Met. Chem. Eng., June 1, 1918, p. 576

An interesting description of the methods employed. Acetone, ethyl propionate, ethyl butyrate, potassium chloride and iodine are produced.

## Books

### Recent accession to the Library:

- Motion Picture Education E. A. Dench

A collection of brief chapters dealing with the various applications of the motion picture as a means of education in schools and factories and in public life. The second half of the book gives instructions how to stage a photoplay and how to finish the films.

# Patent Abstracts

## U. S. Patents

1265352 W. H. Merrill and T. C. Martin 0631

A Method of Taking Motion Pictures which consists in moving the camera in a vertical circle so as to get a stereoscopic effect vertically as well as horizontally. It is claimed to give a better sense of perspective and relief.

1265641 O. Foerster 072

A Process for Making Grained Plates, similar to collotype, the novelty apparently consisting in making a powder adhere to the grain.

1263119 F. Ruppert 1513

Process for Preparing a so-called Cellulose Triacetate by treating cellulose or partially nitrated cellulose with a mixture of acetic anhydride and acetic acid, using a metalloid chloride such as phosphorus pentachloride or sulphuryl chloride as a catalyst.

1265216 W. G. Lindsey, Ar. to Celluloid Co. 1513

Acetyl Cellulose. Cellulose impregnated with acetic acid and alcohol is acetylated with acetic anhydride in benzene, using sulphuric acid as a catalyst. The mixture on completion of the reaction, is immersed in a hot bath of calcium nitrate for the purpose of removing free sulphuric acid.

1265464 A. J. McCloskey 1313

Assigned  $\frac{1}{2}$  to himself,  $\frac{1}{4}$  to A. E. Davis and  $\frac{1}{4}$  to F. J. Geigler

Photographic Paper provided on each side with a ferro under coat and on one side with an outer coat containing ferric salts and on the other side with an outer coat containing ferrous salts.

1260508 B. Borzykowski 1515

Process for the Production of Articles from Viscose. Unripened and unpurified viscose may be converted into satisfactory cellulose hydrate or xanthate products by precipitating with dilute acid or strong salt baths respectively, provided that the precipitated products be allowed to remain a sufficient length of time in the precipitating bath.

1265217 W. G. Lindsey, Ar. to Celluloid Co. 1516

Solvent for Acetyl Cellulose containing ethyl alcohol or one of its homologues which is stated to increase the flexibility and toughness of the product.

1266073 F. Sparre, Ar. DuPont Co. 1516

Pyroxylin Composition consisting of a Nitrocellulose at least 50% soluble in a mixture of equal parts of alcohol and benzene, dissolved in this mixture of liquids together with 3 to 15% of amyl acetate.

1265371 W. A. Peters 2102

Assigned to International Patent Licensing Corporation

A Focusing Attachment with Folding Bed. A lever on the bed is moved before the lens plate is drawn out and the lever sets a lock at the proper point to stop the lens plate. A focusing scale is adjacent an actuating thumb screw on the end of the lever. A catch on the lens plate engages the stop. When the lens plate is thrust into the body of the camera the focusing device is automatically set at infinity.

1266319 W. A. Riddell, Assigned to E. K. Co. 2105

A Winding Key for Roll Film Cameras containing an improved device for resiliently holding the winding handle in folded position against the side of the camera or in operating position at right angles thereto.

1264801 E. W. Humbert 2106

A Large Focusing Cloth provided with an opening through which the camera lens can project and with various straps and eyelets for attachment to different camera parts.

1265456 G. P. Koch 215

A Roll Film Camera in which the film may be cut and part of it separated for development. The film passes through a slot in an extra spool and then through a partition to the winding spool. A knife near the partition may be used to sever the film and close the slot in the partition through which the film is drawn. The film on the winding spool thus severed may then be removed for development and the remaining film wound up on the extra roller. Gummed tabs may be placed on the backing paper to secure the cut edge of the film to it.

1266060 W. R. Schwab, Assigned to Cameragraph Co. 2176

A Copy Board for Commercial Copying and Enlarging Cameras provided with a series of rectangles. The operator compares the object to be copied with these rectangles and notes the number of the rectangle which is of the same size as the object. Then by reference to a table he can tell the distance at which the lens should be set and the amount of bromide paper that should be wound into place for the exposure.

1266443 W. F. Folmer, Assigned to E. K. Co. 219

Improved Shutter and Lighting Mechanism for Cameras of the Meter Reading Type. When the operator presses the lever, the lamp is turned on through an electric circuit which includes the shutter, the circuit being opened and the lamp consequently extinguished when the shutter closes.

1266111 T. A. Evans and L. A. Salisbury 222

An Automatic Focusing Enlarging Camera alleged to be adapted for lenses of different focal lengths.

1265501 H. K. Rightmire and S. E. Berg 242

A Printing Frame for making offset plates for lithographic work with devices to make register of a number of plates easy.

1264524 P. F. Kahler 242

A Photographic Printing Frame of relatively simple type in which a wire frame provided with four clips clamps the negative against the paper and presser back. A wire support at the back of the frame permits it to be inclined at different angles, like an easel, during printing.

1265219 H. A. Burkhardt 2541

A Developing Tank for Roll Film in which two rolls may be simultaneously developed. The ends of the film are attached to clips and the film is drawn horizontally with its end edge vertical in the tank around a central wall. No apron is needed.

1266491 R. Kroedel, Assigned to E. K. Co. 2541

A Roll Film Developing Tank comprising a rectangular body and a sliding cover, the latter having at its forward end a retaining chamber for a film spool. When one end of the film located in said chamber is attached to an adjacent end of the tank and the cover is pushed longitudinally to close the tank, the film is automatically unwound in position for development, the spool being rolled along the bottom of the tank while retained in said chamber.

1265291 W. Bergman, Assigned to B. & B. Photo Co. 257

A Washing Tank for Film, Prints, etc., in which the water is projected from a series of obliquely extending apertures in a coiled tube at the bottom of the tank, so that the water in the tank is circulated.

1265390

J. O. Schmitt 257

A Print Washer consisting in a horizontal cylindrical container in which the pictures are placed. At one end there is a series of vanes like a water-wheel. This is placed in a tank; water into which a small amount of air is introduced flows in beneath the vanes and the bubbles of air cause the vanes and container to revolve.

1264842

A. D. Northrup 264

A Foldable Direct Vision Finder for Hand Cameras. It comprises a relatively large front rectangular frame and a small rear frame connected by a collapsible bellows.

1266323

A. A. Ruttan and C. E. Hutchings 2656  
Assigned to E. K. Co.

A Sheet Metal Film Pack Adapter comprising two hinged telescoping parts, the rear part carrying flanges which engage co-operating flanges on the camera back.

1264972

R. H. Pietzsch and R. P. Nichols 31  
Assigned to Cino Camera Co. of Philadelphia

A Motion Picture Camera or Projector in which the picture units in the series are disposed in rows extending transversely across the film. The film moves intermittently, being driven by a single row of perforations down its center and exposures are made in a series of pictures from one side to the other and then back.

1265699

W. M. Thomas 315  
Assigned to Thomas Oberkirch Co. Ltd.

A Small Motion Picture Camera in which the shutter and the film actuating mechanism is carried in a casing to which the film magazine may be attached somewhat like a roll film adapter. The film is supplied in a container in which there are two spools and this unit is placed on the mechanism-containing unit and a dark slide withdrawn. The film on the winding reel contacts with that on the unwinding reel, so that uniform motion is given to both.

1263496

W. Wenderhold 3201  
Assigned to Cru Patents Corporation

An Intermittent Film-Feeding Mechanism for motion picture apparatus designed to operate at high speed and reduce the power necessary to move the intermittent shaft of a Geneva gear. The latter shaft is carried in a bearing which is itself continuously rotated.

1266254

N. M. Hansen, Assigned to P. F. Reichert 3204  
A Motion Picture Film Reel provided with special grippers.

1264869

B. H. Foster, Assigned  $\frac{1}{2}$  to F. W. Simon 3209  
An Electric Safety Device for Motion Picture Projectors which stops the machine and puts out the light when the film breaks. A spring-pressed roller which bears against the film is pushed forwardly when no film is present, which forward movement releases an electric switch.

1266353

C. A. Trantham 3209  
A Film Chamber for Motion Picture Projectors provided with an automatic fire extinguisher. In the top of the chamber is a compartment in which fire extinguishing liquids are retained by a fusible bottom which melts when heated by burning film and permits the extinguishing liquids to drop on the latter. The melting of the bottom automatically opens an air vent which prevents a vacuum being formed and thus facilitates the downward flow of the liquid.

1265715

C. L. Tomlinson, Assigned to G. Reynolds 322

A Motion Picture Projecting Machine in which the band moves continuously and a moving mirror reflects the image upon the screen. The speed of this mirror depends on the focal distance for which the objective is set and is automatically adjusted by the setting.

1264362

E. M. Bendheim 386

Apparatus for Repairing Motion Picture Film. Mechanism is provided for cutting the film, scraping and roughening the edges, applying cement thereto, overlapping the same and finally clamping the joint until the cement sets.

### British Patents

113617

Hess-Ives Corp. KJ88

Copper Toned Images. A colored photographic image is produced by copper-toning a silver image and then subjecting the image to a dye capable of being mordanted by the copper. The dye may be a basic red dye such as fuchsine or auramine or a mixture thereof in an acidulated aqueous solution, or may be a dye of blue, yellow, or other color. The silver in the copper-toned image may be removed before or after the dyeing or may be left in the image. Images so colored may be used in color photography, cinematography or other branches of the art. A formula for a copper-toning solution is set forth in the specification.

113618

Hess-Ives Corp. K/42

Color Photography. In the production of multi-colored photographs by printing one or more monochromes directly upon a preformed monochrome component, the images of the positives or negatives used for printing the superposed images are colored so as to contrast with the image printed upon; registration of the printing member and the component printed upon is thus facilitated, as inaccuracies in the register produce color fringes. The invention may be applied to a two-color process in which a blue-green positive is produced from a red-representing negative, and a green-representing negative or a diapositive therefrom is used to print upon the blue-green positive, the blue-green positive being re-sensitized with bichromate or having a sensitive layer applied to it before the second printing, and the second print being selectively dyed, the color of the image of the green-representing by copper-toning it and subjecting the toned image to a red dye which is mordanted by the copper. The second print is dyed with a red dye which is selectively absorbed by the hardened gelatine or by the unhardened gelatine accordingly as a negative or diapositive is printed from. A formula for a copper-toning solution is set forth in the specification.

114458

C. Laing /84

Photometer. Photometer for use in photography to determine exposure data comprises means whereby daylight is compared with a standard light, shutter devices being provided so that the light emanating from one source is increased while that from the other decreased and vice versa. Mounted in a cylindrical casing are two fixed shutters having angular openings and two revolving shutters formed with openings but oppositely arranged. These latter shutters are mounted in a slotted cylinder which can be revolved by a finger piece so that the amount of daylight entering from one end is decreased or increased at the same time that light entering from an electric lamp is increased or decreased. Excess red rays from the lamp are absorbed by a suitable screen carried by the shutter. Equality of light entering from both sources is judged by means of a comparison device consisting of a tube fixed in the casing and passing through the slot in the cylinder. Mounted on the lower end of the device are two translucent blocks separated by a tinfoil diaphragm and observed through a lens. A pointer carried by the finger piece moves over a suitable scale carried by the instrument.

114304

H. Dreyfus 122

Celluloid; Films. Celluloids and films are made from a mixture of cellulose acetate and softening agents, such as triacetin, triphenyl phosphate, or tricresyl phos-

phate, the proportion of softening agent being more or less according as the acetate is more or less viscous.

113998

S. C. Swann 2152-2653

Photographic Cameras. Roll films are wound on flangeless spools of triangular polygonal section which may be formed solid or by bending a strip of metal or other material to form a tube with a slit in which the end of the film is held. Automatic means are provided for winding the required quantity of film after each exposure.

114460

W. T. Coulson 2231

Optical Projection Lantern. A special lamp is used with a projecting portion to the bulb in which is situated the source of light, and in this way the source of light can be placed in the focus of a paraboloidal mirror perforated to admit the projecting part of the bulb, the paraboloidal mirror being generally vertical and fitted below with a plain mirror to render the beam horizontal.

113867

Thornton-Pickard Mfg. Co. 2233

Improvements in Holders for Condenser Lenses. Holders for condensing lenses in projection lanterns. Clips are employed in place of the usual tube, thus allowing better ventilation and tending to diminish condensation.

113919

H. Nimmo 2653

Improvements in and Relating to Spools or Cartridges of Film for Photographic Cameras. To allow spools of film to be employed in any camera taking those of the given width, it is proposed to mark the back of the light-proof paper, not with the usual numbers of the exposures, but with a linear scale with consecutively numbered divisions.

114173

R. I. Atherton, D. B. Jones and S. Croneen 2833

(Incorrectly assigned to Cine Apparatus by the Patent Office)

Moving Portrait Apparatus. In apparatus comprising a composite photograph and a ruled screen enabling the photograph to be exhibited with an animated effect, the photograph is printed on a celluloid base and is mounted in front of a sheet of paper ruled with lines corresponding with those on the screen used in making the negative; the ruled paper and the photograph may be kept in contact by embossing the central portion of the card upon which the ruled paper is mounted. The photograph is carried by a front card which has an oval or other opening and is secured to the back card by flexible strips permitting relative movement of the cards.

114003

F. B. Dehn, (Bell &amp; Howell Co.) 3201

Cine Apparatus. A stop mechanism in which a rod is moved into the path of an element carried by a rotating member, provided with a means for preventing recoil and for absorbing shocks.

113895

E. F. Moy and P. H. Bastie 3204

Improvements in and connected with Spools or Reels for Cine Films. A reel for cine film with a hub having one or more bars, each bar being arranged either in a recess in the hub or opposite to a flat on the hub so as to leave clearance for the film, the reel being provided with means for securing the ends of the film intended to replace the usual clip.

113842

F. B. Dehn, for Bell &amp; Howell Co. 34

Improvements in Cine Apparatus. In a cine apparatus a method of exerting pneumatic pressure upon the film as it passes through the light aperture, especially adapted to printers.

Monthly  
**ABSTRACT**  
Bulletin



August, 1918

Issued by the Research Laboratory  
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Rochester, New York



# Monthly Abstract Bulletin

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August, 1918



*Harvard College Library  
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## Photography

- Side Lights on the Manufacture of Motion Picture Film A1212  
Mot. Pict. News, July, 1918, p. 270

A description of the various operations involved in the manufacture of motion picture film.

- Percentage Solutions G1  
B. J., 1918, p. 234

Description of the real meaning of percentage solutions as complicated by the use of the British system of weights and measures.

- Making and Keeping Developers G1  
B. J., 1918, p. 246

Developers sometimes show considerable difference in their behavior according to the method of compounding them. The best method of making up the standard pyro developer is stated by the editor of the journal.

- Fixing Prints Without Hypo D. Kidd G6  
B. J., 1918, p. 269

The author has made experiments on depressing the sensitiveness of P. O. P. by soaking it in bromide after printing. The prints go to a yellowish color on first soaking, but on exposure to sunlight the print changes to a sepia. A print so fixed will stand diffused daylight for a considerable time, though with exposure to direct sunlight, it finally darkens all over.

- Making the Apprentice Efficient H1 H2  
Studio Light, June, 1918, p. 6

An instructive lesson on intensification and reduction.

- Decennia Practica K/3  
B. J. Col. Sup., 1918, p. 23

Color Photography. Processes of making color screen plates. This contains reprints of the references published in the B. J. Almanac, to the patents of Krayn, Powry, Ruth and Smith.

- The Dufay Versicolor Screen-plate Color Film K/32  
B. J. Col. Sup., 1918, p. 21

A description of the manufacture of this film, which is made by embossing celluloid, filling the depressions with a colored greasy ink, treating the surface with a colored solution which dyes the portions not protected by the ink, and then repeating this process on the back of the film, thus getting a four-color effect.

- The Retouching of Enlargements on Bromide Paper L4  
 II Prog. Fotografico, 1918, p. 109

A series of articles on this subject illustrated by photomicrographs showing the appearance of the retouching and its effect.

- The Fundamentals of Photography, Chapter IV C. E. K. Mees 012  
 Kodakery, July, 1918, p. 18

A description of the chemistry of the light sensitive silver compounds used in photography and of the making and fixing of print out prints.

- Testing of Optical Glass 019  
 Mot. Pict. News, June, 1918, pp. 3612, 3756, 3964

Report of a circular prepared by the U. S. Bureau of Standards.

- Optics for Photographers A. S. C. 019  
 Mot. Pict. News, July, 1918, p. 130

A review of a translation, by F. R. Fraprie, of Dr. Harting's "Optisches Hilfsbuch für Photographierende".

- Cloudland and Sky 021  
 Photo Miniature, April, 1918

A plea for a larger appreciation of the value of the clouds and skies in picture making by photography; with approved methods of treatment, and a few illustrations.

- The Position of the Illuminant in A. Lockett 046  
 Enlarging and Projection  
 B. J., 1918, p. 248

It is pointed out that the best position for an illuminant is not that which forms an image of the light source at the nodal point of the objective but that in which the focus is just in front of the projection system. This is stated to be due to the diffusion introduced by the negative or slide. The spherical aberration of the condenser, however, is not considered and this is the main factor in the matter.

- Systematizing the Laboratory G. A. Prager 064  
 Mot. Pict. World, June, 1918, p. 1715

A description of a simple card index system for motion picture laboratories.

- The Influence of Length of Throw on the 067  
 Brightness of the Projected Picture  
 Mot. Pict. News, June, 1918, p. 3960

An increase in amperage is required to properly illuminate a picture of given size at throws of increasing length, owing to conditions inherent in the arrangements of the projector optical system, and to scattering of the light by dust particles and smoke.

Rapid Panchromatic Plates

114

B. J., 1918, p. 283

A review of a new panchromatic plate put on the market by Ilford Ltd., showing increased sensitiveness to red and green light.

New Developers

15314

B. J., 1918, p. 240

Two new British developers reviewed are Serchol, sold by W. Butcher and Sons, and Glycin-Johnsons, sold by Messrs. Johnsons. The latter is stated to be identical with the product formerly on the market under the name of glycin, while serchol is probably para-amido-orthocresol.

Sodium Bisulfite

1532

Studio Light, June, 1918, p. 14

The Company now manufactures sodium bisulfite practically free from iron and bisulfate.

Substitute for the Acetic Acid Fixing Bath

164 G6

Studio Light, June, 1918, p. 18

The following chrome alum fixing bath is recommended for fixing prints:

Water . . . . .	64 ozs.
Hypo . . . . .	16 ozs.

When dissolved add the following solution:

Chrome Alum . . . . .	100 grs.
Sod. Bisulfite . . . . .	1 oz.
Water . . . . .	5 ozs.

Elliptical Reflector for Cinematograph Projection with the Tungsten Lamp

3205

Il Prog. Fotografico, 1918, p. 114

This new Salto lamp made by Ganzini is designed to give a powerful cone of light for motion picture work from a 1000-watt condensed filament lamp.

Incandescent Lamps for Motion Picture Service

A. R. Dennington 3207

Mot. Pict. News, June, 1918, p. 3752

The American Film Cleaner

387

Mot. Pict. News, June, 1918, p. 3962

Motion picture positive film is cleaned and renovated by first passing through a series of revolving brushes immersed in a tank containing the cleaning fluid, and then past a series of flat rubber squeegees. The surplus cleaning fluid is removed from the sprocket holes by winding the film in contact with a strip of clean white paper which is slightly absorbent. The film is finally rewound from the receiving wheel on a double rewinder which rewinds the film upon one reel and the paper strip on another.

### The British Photographic Research Association

B. J., 1918, p. 272

This association has been founded by the members of the Association of British Photographic Manufacturers to undertake cooperative research, especially on the scientific investigation of the fundamental phenomena of photography. The commencement of this work represents the first of the laboratories organized under the Department of Scientific and Industrial Research. An editorial note on the subject is published on page 278.

### Report of the Professional Photographers' Association on the Training of Disabled Soldiers and Sailors for Photographic Employment

A. Mackie

B. J., 1918, p. 282

The council of the association was asked to consider the practicability of employing disabled soldiers and sailors as photographic workers. It states that the economic problem is such that it cannot decide on the point, but it seems to be doubtful as to whether there would be sufficient employment to make it desirable to train disabled soldiers for photographic work.

"The Amateur Photographer" has been purchased by Messrs. Iliffe and Messrs. Hazell, Watson and Viney and is to be combined with "Photography and Focus" under the editorship of Mr. R. Child Bayley

B. J., 1918, p. 242

## Physics

### Relative Sensibility of the Average Eye to Light of Different Colors and some Practical Applications to Radiation Problems

W. W. Coblentz and W. B. Emerson

Bull. Bur. Stand., June 17, 1918, p. 167

The "visibility" curves of one hundred and thirty subjects were obtained. A great many cases of abnormal red, green and blue sensitiveness were found, making the precise specification of the "average eye" a difficult matter. It was found that age plays a part, older subjects being less blue and red sensitive. The flicker photometer was used in making the measurements. It was found that little reliance could be placed in equality-of-brightness measurements in heterochromatic photometry. A "visibility of radiation" equation is worked out, differing in form from that found by previous workers. If the visibility curve is corrected for absorption of the eye media, it is found to be symmetrical. This has led Troland to the important conclusion that luminosity is due to a single photochemical process in the retina.

### Axial Aberrations of Lenses

E. D. Tillyer and H. I. Shultz

Sci. Papers, Bur. Stand., No. 311

An elementary presentation of the subject of the axial aberrations of lenses, especial emphasis being laid on spherical aberration and coma. It is shown how curves of spherical aberration and sine condition can be easily obtained. The objective to

be tested is covered with a plate having a series of small holes. Photographs of a distant light source are then made within and without the focal point. Measurement of the series of images gives at once the aberration and sine condition curves. Superiority over the Hartmann method is claimed. Curves for a large number of photographic objectives are given.

**Luminous Radiation from a Black Body and the Mechanical Equivalent of Light**  
W. W. Coblentz and W. B. Emerson  
Bull. Bur. Stand., June 17, 1918, p. 255

The authors introduce a novelty in obtaining the luminous radiation from a black body in that the visibility curve of the eye is combined with the black body radiation curve by mathematical instead of the graphical process used heretofore. It is thus found that one lumen equals .001627 watts. The maximum luminous efficiency of a black body is found to be 14% at 6300° C. That of a tungsten lamp at 1.23 watts per candle was but 1.42 per cent. It is interesting to note that the sun is near the temperature of maximum luminous efficiency.

**Scattering of Light by Dust-Free Air, with Artificial Reproduction of the Blue Sky.—Preliminary Note**  
R. J. Strutt  
Proc. Roy. Soc., June, 1918, p. 453

Deductions from observations on the opacity of the atmosphere at various zenith distances, and opacity variation with wave length at Mount Wilson are found to be nearly in agreement with what would be expected if scattering by the molecules were alone operative, leaving little room for the action of larger particles.

This paper describes laboratory experiments carried out to show the scattering of light by dust free air and other gases. The light scattered at right angles to the incident beam is practically plane polarized with vibrations at right angles to that of the incident beam. The spectrum of the scattered light shows that the phenomenon is not fluorescence.

**Fundamentals of Illumination Design**  
Part II. Illumination Design  
W. Harrison  
Gen. Elect. Rev., June, 1918, p. 419

The paper deals with the principles underlying the design of lighting systems. The principal types of Mazda lamps are listed and the characteristics of each are tabulated. Concludes with a brief outline of the procedure for calculating any lighting installation.

**Development of Electric Searchlamps**  
L. J. Auerbacher  
Elec. World, June 22, 1918, p. 1319

The newest principle of operation consists of rotating small diameter cored electrodes subject to increased arc voltage in order to give a highly concentrated and intense crater. The Beck and Sperry lamps are described and compared.

**Motion Picture Projection with Tungsten Filament Lamps**  
J. T. Caldwell, A. R. Dennington, J. A. Orange and L. C. Porter  
Trans. I. E. S., June, 1918, p. 232

This paper covers the historical development of the carbon-arc motion picture projector, and points out some aspects of the subject that favor the replacement of

the arc by the incandescent lamp. The types of the lamps used, together with illustrations of the auxiliary equipment, and the data on the advantages and disadvantages of the several systems form the major part of the paper.

**Ornamental Utilitarian**

S. L. E. Rose and H. E. Butler

**Street Lighting Units**

Gen. Elec. Rev., June, 1918, p. 430

A description, with tables, figures and curves, of the "Novalux" street lighting units.

**The Central Station and Illumination**

H. E. Mahan

Gen. Elec. Rev., June, 1918, p. 441

The several general systems of lighting are discussed. Curves and data given for flood-lighting projectors.

**Examination of Metals by X-Rays**

H. Pilon

J. Rönt. Soc., Jan., 1918, p. 17

Description of different examples.

**A New Radiator Type**

W. D. Coolidge

J. Rönt. Soc., April, 1918, p. 38

Description of the new tube. Advantages are: (1) It can be used to rectify its own current under conditions of service which are much severer than would be permissible with the earlier type of hot cathode tube having the same size of focal spot; (2) The bulb can be smaller than is permissible with the earlier type handling the same amount of energy; (3) On either alternating or rectified current it will carry the the maximum allowable energy for a much longer time.

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## General and Inorganic Chemistry

**Investigations into some Theoretical and Empirical**

J. J. v. Laar

Relations between Surface Energy, Molecular Pressure, Evaporations, Heat, Gas-pressure and the Density of the Co-existing Phases. I.

Chem. Weekblad, June 1, 1918, p. 680

Mathematical discussion of surface tension and surface energy.

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## Analytical Chemistry

**The Use of Metallic Silver as a**

G. Edgar and A. R. Kemp

Reducing Agent in the Volumetric Estimation of Iron

J. Am. Chem. Soc., 1918, p. 777

In this article is described a new process for the volumetric estimation of iron, based upon the fact that ferric sulfate is reduced to ferrous sulfate by metallic silver in the presence of a thiocyanate. The reduced solution after filtration is treated with

an excess of silver nitrate, and the ferrous iron is titrated with potassium permanganate (or if preferred the excess of silver may be titrated back with thiocyanate). Test analyses with known ferric sulfate solutions and with samples of iron ores standardized by the Bureau of Standards are presented which show that the method is one of high accuracy. The method has the advantages (1) that the thiocyanate serves to show when the ferric iron is completely reduced; (2) that silver, unlike zinc and aluminum, is ordinarily free from iron, making blank determinations unnecessary; and (3) that silver does not reduce titanium at all, and reduces vanadium definitely to the quadrivalent state. The method is rapid in execution.

**The Acidimetry of Colored Solutions: An Application of the Pocket Spectroscope**

A. Tingle

J. Am. Chem. Soc., 1918, p. 873

The spectroscope is an efficient means of distinguishing the exact neutral point in many acidimetric titrations, and it can be used for this purpose in cases where the unaided eye would fail.

**The Detection of Iodides in the Presence of Cyanides**

L. J. Curtman and C. Kaufman

J. Am. Chem. Soc., 1918, p. 914

A rapid and reliable method is proposed which is capable of detecting one milligram of iodine (in the form of iodide) in the presence of 500 mg. of potassium cyanide.

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## Photochemistry

**The Laws of Thermochemical Processes and of Photochemical Processes**

M. Trautz

J. Chem. Soc., 1918, p. ii. 151

The author summarizes his views on the laws of gas reactions, with particular reference to the relation between the velocity constant, heat of reaction, and "heat of activation". The equation and laws deduced for thermochemical reactions are then applied to photochemical reactions.

**Fluorescence and Phosphorescence**

S. E. Sheppard

Ill. Eng., Feb., 1918, p. 62

Polemical. The adjustment of luminescence as between fluorescence (instant response) and phosphorescence (retarded response) is attributed to a catalytic effect of impurities.

**Absorption and Phosphorescence**

E. C. C. Baly

J. Soc. Chem. Ind., 1918, p. 171R

Stokes, law holds for the maxima of absorption and phosphorescence. Every substance possesses a fundamental vibration frequency in the short wave infra-red, and the harmonics of this form free periods in the visible and ultra-violet. Which of these are excited, and whether as absorption (with heat evolution), fluorescence, or phosphorescence, depends upon the physical and chemical conditions. Solvents (and "impurities") are very important in determining this. Details on constant frequency differences are given.

## Colloid Chemistry

### Rubber Substitutes

A. H. King

Met. Chem. Eng., 1918, p. 630

The writer discusses the following groups of substitutes: 1—Oil compounds (sulphuretted blown oils known as subs) 2—Asphaltic Materials; 3—Resinous substances; 4—Greases; 5—Waxes; 6—Glue. In America the only one of these extensively used is "mineral rubber" coming under group (2).

### Theory of Dyeing

H. R. Kruyt and J. E. M. van der Made

J. Soc. Chem. Ind., 1918, p. 238A

The distribution of the basic dyes between isobutyl alcohol and water is affected by sodium salts of different acids according to the anion lyotrope series:— $\text{SO}_4$ ,  $\text{PO}_4$ ,  $\text{Cl}$ ,  $\text{Br}$ ,  $\text{NO}_3$ ,  $\text{I}$ ,  $\text{CNS}$ . With acid dyes the effect is hardly appreciable.

### Bisulfite Liquor and Its Constituents

J. Beveridge

Paper, June 26, 1918, p. 11

For the most part the constituents of sulfite lye are in the colloid condition. Utilization can consist either in integral utilization as colloids e. g. (a) as a dust binder on roads, (b) as cement or binder for briquettes, (c) as wood preservative, (d) as fertilizer, (e) as sizing material, (f) as tanning agent; or differential utilization yielding solvents, dyestuff, etc., and by-products useful as fuel.

### Brownian Movement and Coagulation of Colloids from Solutions

H. W. Woudstra

Chem. Weekblad, June 1, 1918, p. 679

The author defends his statements (Chem. Weekblad, 1912, p. 302) on the relation of the Brownian movement to coagulation. This tends to bring particles into contact whilst the addition of electrolytes and consequent action of ions with a charge contrary to that of the micelles tends to make them cohere and precipitate.

## Organic Chemistry

### Determination of Cellulose in Wood

B. Johnsen and R. W. Hovey 1411

J. Soc. Chem. Ind., 1918, p. 132T

The samples are heated with alcohol, washed with alcohol, and then heated with a mixture of glycerol and acetic acid. They are then washed with hot water and subjected to the action of chlorine. After washing with dilute sulfurous acid they are digested with 3% sodium sulfite solution, washed, and again chlorinated. The chlorination and treatment with sodium sulfite are carried out three times, whereupon the samples are well dried at  $105^\circ$ . Analysis of the constituent lignocelluloses is also described and discussed.

### Determination of Acetic Acid by Distillation with Phosphoric Acid

W. F. Munn 1511

J. Ind. Eng. Chem., 1918, p. 550

Complete directions for a modified method for determining acetic acid in acetates.

- Manufacture of Amyl Acetate from Petroleum Pentane**      B. T. Brooks, D. F. Smith      1516  
and H. Essex  
J. Ind. Eng. Chem., 1918, p. 511

Petroleum boiling over a range of 25° to 45° is treated with chlorine until 20% is chlorinated, and the monochloro derivatives separated by fractional distillation; these are then treated with anhydrous sodium acetate and glacial acetic acid, from which the mixed amyl acetates are separated by fractional distillation and washing with sodium carbonate solution. The resulting products possess the same solvent power for cellulose esters and gums as the amyl acetate obtained from fusel oil, unless contaminated with unchanged chloropentanes, when their solvent action is diminished.

- Determination of Acetone**      A. T. Field      1516  
J. Ind. Eng. Chem., 1918, p. 552

The author condemns Messinger's method, and claims that the most accurate results can be obtained with the method of Robineau and Rollins.

- Estimation of Water in Glycerol**      I. M. Kolthoff  
J. Soc. Chem. Ind., 1918, p. 250A

Reference to a method, described in the Pharm. Weekblad, based upon the temperature range of complete miscibility of samples of glycerol and aniline.

- Tetraiodophenolphthalein**      W. R. Orndorff and S. A. Mahood  
J. Amer. Chem. Soc., 1918, p. 937

This substance and its tetrachloro derivative, together with their salts, which possess a blue color, have been accurately studied. Alkaline solutions of phenolphthalein present in the visible region an absorption band at 1600-1800; introduction of halogen atoms into the molecule shifts all bands towards lower frequencies.

- Nitrosotriphenylamine and Colors**      J. Piccard and M. Kharasch  
J. Amer. Chem. Soc., 1918, p. 1074

Substances containing an absorption band also possess an octave band, that is, one at double the frequency; further, on introducing heavy groups into a colored molecule, the bands are shifted towards lower frequencies. In the case of nitrosotriphenylamine, the fundamental band lies in the infra-red region, the octave in the violet, so that the yellow color of this substance is stated to be of the second order.

- A Study of the Glucosazone Reaction**      I. D. Garard and H. C. Sherman  
J. Amer. Chem. Soc., 1918, p. 955

A maximum yield is obtained with phenylhydrazine in 1.0 to 1.2 molar solution in presence of 2.0 to 2.5 moles of acetic acid.

- The Oxidation of Diaminophenols**      J. Piccard and L. M. Larsen  
J. Amer. Chem. Soc., 1918, p. 1079

The red colors produced on oxidizing 2,4- diaminophenol and its derivatives are shown to be of the formation of simple holoquinonoid aminoquinonimines.

## From Eastman Kodak Research Laboratory

Effect of the Iron Content of Ammonium Persulphate      S. E. Sheppard  
in Its Photographic Reducing Power

Phot. J. Amer., July, 1918, p. 297

Communication No. 60

The various factors in the reducing activity of ammonium persulphate are discussed, and a cause for the variability of this with different persulphate samples found in the iron content. It is known that small quantities of iron have a very considerable catalytic effect on the reaction between persulphate and silver, and that the content of iron should be small if a controllable reducer is required.

Photographic Paper for Use in the Determination  
of Sulfur in Iron

089-0945

Report No. 523

The laboratory was requested to experiment with several glossy papers in order to find whether any paper presented any special advantages for this purpose. The paper was bathed for five minutes in a solution of  $2\frac{1}{2}\%$  hydrochloric acid and  $\frac{1}{2}\%$  sulphuric acid and was then squeegeed onto steel plates ground smooth, the surfaces having first been cleaned from grease by washing in a 20% solution of caustic soda. After a contact of five minutes the papers were rinsed, fixed in a weak fixing bath, washed and dried. The results show that all the glossy papers were satisfactory, and no distinction between the different papers was discernible.

## Patent Abstracts

### U. S. Patents

1266766      J. E. Brandenberger, Assigned to La Cellophane Co.      B121

A Composite Film comprising a layer of gelatin, resin, oil, paraffin, or rubber, sandwiched between two nitro-cellulose layers.

1267844      P. D. Brewster      K/43-K345

A Printing Apparatus for Two-Color Motion Picture Photography. The complementary negative images on the opposite sides of an opaque white reflecting film are projected by a double reflecting system to the opposite sides of a double coated positive film.

1267411      A. S. Howell, Assigned to Bell & Howell Co.      1212-3201

Motion Picture Film provided with longitudinally elongated perforations, the centers of which each align with the medial lines between the adjacent views. This film is adapted to cooperate with a special feeding element provided with a central claw which accurately fits one of the perforations and with two smaller auxiliary claws which grip in adjacent perforations sufficiently to align the film longitudinally.

1266810

J. L. Johnson 2152

A Quick Wind and Double Exposure Prevention Device. The take-up for the film is spring actuated and every time the shutter is operated the spring is released to move a new picture area into the focal plane.

1267159

S. G. Zuckerman 2153-2651

A Photographic Plate Holder with means for making an inscription upon a plate. The slide which protects the plate has a transparent portion covered by a hinged flap. When the plate holder is in the camera the slide is withdrawn and the inscription written upon the transparent portion. Then the slide is reinserted into the plate holder and when this is removed from the camera, the flap is opened to permit the inscription to be light-printed upon the plate.

1266616

S. E. Odell 2155

A Panoramic Camera mounted to revolve about its optical axis. The features of novelty are the provision of a series of tapering slits which may be placed either before the lens or between the lens and the film, so that the sky part of the picture will be less exposed than the foreground. A diaphragm showing the proper slot is selected for each exposure. There are two focusing screens, one for use when the film is in place and the other centrally located for use when the film is not in place.

1266385

F. W. Barnes, Assigned to E. K. Co. 241

A Photographic Printing Machine in which the printing lamp is adjustable in two directions in a horizontal plane. The lamp is carried by a laterally moving carriage mounted upon a second carriage, which is itself movable longitudinally of the light chamber. Both carriages are controlled by a single sliding rotary rod projecting out of the chamber.

1266001

B. L. Dickason 258

A Drying Cage for Photographic Film consisting of a skeleton framework and adjustable bars having clasps, so that film strips of different lengths may be stretched to dry.

126649

A. Wollensak, Assigned to Wollensak Optical Co. 2623

A Pneumatic Dashpot Retarding Device for Between-the-Lens Shutters. The piston is formed with an internally threaded bore, into which is fitted a piston rod having two spring tongues engaging the threads.

1267404

N. W. Halsey 264

A Reflecting View Finder intended to show the correct field whether the camera be arranged to take either vertical or horizontal pictures. The lenses which act as the image forming and image viewing lenses while taking vertical pictures, are automatically reversed when taking horizontal pictures, so as to act as viewing lenses and image forming lenses respectively. As the masks of the lenses are at right angles to each other, the adjustment of the field of view is thus made automatically.

1267055

R. M. Cathcart 281

A Print Trimmer in which the cutting table is transparent and illuminated from below, so that the operator can gauge the margin of a print whether it be face up or face down. An auxiliary light source illuminates one of the knife edges from below.

1267017 J. W. Vickers (See British Pat. No. 106856) 3104

A Magazine for Motion Picture Film composed of two telescoping halves provided with light-trapped registering slots through which the film may be pulled. Thus the camera may be loaded in daylight.

1267688 H. K. Norton 319-068

A Stereoscopic Motion Picture Camera in which there is a prism behind each lens for directing the light rays toward a single film gate. The film in the gate is angularly moved to bring the film into the focal plane of whichever lens is opened by the shutter at any instant.

1267689 A. K. Norton 319-068

A Stereoscopic Motion Picture Camera in which the pictures are taken above each other on a single width motion picture film. The lenses are not only separated horizontally, but also vertically, and the light rays from the lenses are doubly reflected to a central film gate.

1265039 J. M. Bower, Assigned 2/5 to Newton Ripper 3201

An Automatic Film Threader for use in displaying uninterruptedly a series of reels of motion picture film. A jointed metal connector unites the end of one film to the next.

1267413 A. S. Howell, Assigned to Bell & Howell Co. 3201

A Loop Forming Mechanism for Motion Picture Apparatus. An arm carrying a roller is adapted to be swung across the film path to form a loop therein. The range of movement of the arm is adjustable to accurately regulate the size of the loop.

1268035 C. Marti 3201

An Intermittent Movement for Motion Picture Projectors. An index wheel on the intermittent shaft is alternately driven and locked by pivoted driving and locking pawls which are cam-actuated from the continuously rotating shaft.

1266379 R. M. Anderson 3204

A Motion Picture Reel in which the heads of the bolts connecting the flanges to the hubs are countersunk.

1267773 S. Kohn 3204

A Film Reel provided with a special spring clamp upon the hub for fastening the inner end of the film.

1266778 T. A. Edison, Assigned to Thomas A. Edison, Inc. 324

A Process of Making Projection Screens comprising softening oil-cloth in steam under pressure; brushing metal powder such as five parts of aluminum bronze mixed with three parts of amethyst violet bronze powder on to the softened surface of the oilcloth; and finally varnishing the same with a mixture of linseed oil, turpentine and Japan drier.

## British Patents

114933

G. W. K. Crosland X137

X-Ray Photography. Sensitized paper or like flexible material for obtaining direct X-ray photographs or radiograms is covered or coated with a paint or wash of Venetian red, chrome yellow, or like preparation to form an opaque protecting medium over the sensitized surface and over the back of the paper.

114899

G. Robson 062

Cinematography. In cinematograph films, frames or borders are provided in conjunction with the pictures bearing titles, sub-titles, trade marks, numbers indicating the part of the subject, or notices, the frames or borders being separated from the pictures by a blank space or spaces. The frames or borders may vary in design in different parts of the film, and may consist wholly or in part of animated picture designs, such as a crowd of people representing spectators of the principal picture, or people occupying boxes in a stage proscenium, or may consist of moving lines or letters forming designs or words. Masking devices may be used in the camera when taking the pictures to reserve spaces on to which the frame, etc. is afterward photographed, or the frame, etc. may be photographed simultaneously with the principal picture.

114776

H. W. Rogers 069-323

Synchronizing Cinematographs and Phonographs. Method by which successive phonographs can be attached by clutches to a cinematograph projector, the clutches being actuated by suitably placed projections or slots on the cinematograph film.

114871

J. Wade 1212

Cinematograph Picture Films. A cinematograph film is composed of a series of sections connected together by transverse flexible strips. The hinges are preferably I-shaped and comprise a transverse part having lateral extensions lying along the edges of the film and may be imbedded in the substance of the film. The film is arranged to be stored folded in a zigzag manner in a box having an outlet at the top through which the film is drawn through the lantern and thence to a similar box where it is similarly folded ready for projection without re-winding.

114456

A. D. Berglund 1411

Apparatus for Washing and Airing Cellulose for the purpose of freeing it from the chemicals and gases introduced in bleaching, the apparatus consisting of a wash tub provided with a stirring and sprinkling device, a closed vessel provided with means for spreading the mass out and subjecting it to an air current and also provided with means for removing the gases and used air, the mass being kept in constant circulation between the said wash tub and the airing vessel by means of a centrifugal pump.

118459

H. Dreyfus 1511

In the manufacture of acetic acid by the oxidation of acetaldehyde, the oxidation reaction is conducted between 150° and 250° C, and preferably between 150° and 200° C.

- 110906 Soc. Chimique des Usines du Rhône 1611

Process for the Production of Acetic Acid by the distillation of ethylidene diacetate in vacuo in the presence of sulphuric acid.

- 114072 S. J. Tungay and G. B. Haughton 1511

Device for the Concentration of Sulphuric Acid by means of a tray having special corrugations so as to increase the heating surface.

- 114707 R. Houghton 2151

Improvements in Roll Film Cameras. The improvement is intended to provide means whereby a portion of the film may be removed after exposure and the remainder utilized in the camera. This is done by means of a clamp adapted to engage the film and backing paper in such a way that after the clamp is secured in position the film and backing paper may be severed on the wind-off side of the clamp, the used portion of the film removed, and connection re-established by a flexible member in connection with the clamp.

- 114672 A. M. Oppenheimer 2152

Cameras. In order to minimize the danger of doubly exposing a plate or film, a camera is provided with a stop or abutment which is adapted to occupy the path of the shutter trigger on its return stroke and thus prevent it from returning to its original position, until the stop or abutment has been removed.

- 115348 W. E. Stromberg and E. H. Schmicking 258

Rotary Print Driers. Cf. U. S. 1234410.

- 114994 A. G. Smith 3203

A shutter in which the masking blade is translucent or semi-translucent, the blade being made of a sheet of dark blue or other colored material, thus permitting a certain quantity of light to pass through to the screen, the flicker blade at the same time being made of opaque material with radial slots in it.

# Monthly **ABSTRACT** Bulletin



September, 1918

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# Monthly Abstract Bulletin

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September, 1918

## Erratum

In the *Abstract Bulletin* for August, 1918, page 131 line 36, instead of *Stokes*, read *Stokes'*.

# Photography

A New Method of Color Sensitizing Photographic Plates E. Koenig C114-1681

J. Soc. Chem. Ind., 1918, p. 350 A

Plates are not sensitized by bathing in a pure alcoholic dye solution but may be sensitized if the alcoholic dye bath is followed by a water bath.

Color Sensitive Bathed Photographic Plates H. Lüppo-Cramer C114 018

J. Soc. Chem. Ind., 1918, p. 351A

Color sensitizing of photographic plates by bathing as compared with the introduction of dyes into the emulsion confers greater sensitiveness with, however, loss of keeping quality. The latter may be increased at the expense of the former by introducing some potassium bromide into the dye bath.

Reducing Over-Exposed Prints H1

Amat. Phot., June 26, 1918, p. 27

Method of dealing with prints on self-toning paper, P. O. P., or bromide paper, which are too dark from over-printing.

Decennia Practica—Color Photography K/3

B. J. Col. Sup., 1918, p. 26

Process of making color screen plates.

Printing on Salted Paper L. Cartwright J1 /68

Amat. Phot., June 26, 1918, p. 31, and July 3, p. 55

Full working instructions are given for sensitizing any ordinary drawing paper or other similar materials, printing, toning, fixing, masking the finished prints, and securing a wide range of tones.

Single Solution Sepia Toning: Views and Reviews I J84-1663

B. J., 1918, p. 322

Discussion of the various direct sulfide toning solutions which have been suggested, including the hypo alum bath containing sulfo cyanide recommended by M. B. Punnett, the ammonium sulfide bath containing persulfate recommended by F. Kropf, a bath of ferricyanide and sulfide, for which a formula was given by Blake Smith, and W. Triepel's single solution toning bath containing thio-urea. It is suggested that the use of compounds such as thio-urea is a likely direction in which to seek for a stable single solution sulfide toning bath.

Some Causes of Failure in Sulfide Toning J84

Amat. Phot., July 10, 1918, p. 88

Practical notes from the Rajar Laboratory.

Using the Retouching Machine O. S. Stebbins L1-275

Camera Craft, 1918, p. 310

Describes an electrically operated retouching machine.

## Paint on the Back of Negatives

L2

B. J., 1918, p. 302

Detail description of a method of working on the back of the negative, drawn from that used by a firm of commercial printers.

## Some Aids in Blocking-out Negatives

D. Charles

L2

B. J., 1918, p. 330

Practical hints on this subject.

A Wax Medium and Process for the  
Permanent Coloring of Photographs

A. V. Godbold

L5

B. J., 1918, p. 311

For coloring photographs, the author recommends a medium consisting chiefly of wax, the formula given being

White wax, (Cera Alba)	¼ oz.
Spike oil of lavender,	½ oz.
Hard primrose soap,	1 dr.
Gum elemi,	2 dr.
Turpentine,	3½ ozs.

This medium is mixed with the powdered color or oil color on the palette and applied with a soft piece of rag. The method of use is described in detail.

## The Kodak Research Laboratory

A. S. Cory

01

Mot. Pict. News, July, 1918, pp. 420, 627, 776, 934

A very complete description of the Research Laboratory, including a review of a number of scientific communications published by the members of the staff.

## Colloid Chemistry and Photography

H. Lüppo-Cramer

012

J. Soc. Chem. Ind., 1918, p. 167A

Photo-micrographs of silver chloride crystals, which have been exposed to sunlight, exhibit a very large number of dark points which are considered to be due to aggregates of silver particles. The pressure developed by the corresponding chlorine leads to disturbances in the crystalline structure which result in disintegration.

## The Early Work of Hurter and Driffeld

W. B. Ferguson

015

Phot. J., 1918, p. 206

This is the first of the Hurter and Driffeld memorial lectures, Mr. Ferguson, who has taken a very active part in the work of the H. and D. Memorial Committee, being selected to give the first lecture. Dr. Hurter was born in Switzerland in 1844, and was trained as a chemist at Zürich and Heidelberg. In 1867, he entered the works of Gaskell, Deacon & Co., now the United Alkali Co., in Widnes, England. Mr. Driffeld was born in Lancashire in 1848, and after a school education was trained as an engineer, but spent six months in a studio where he learned the photography of that period. In 1871 he entered the employ of Gaskell, Deacon & Co. and there met Dr. Hurter. H. and D. took up the work on photography with a view to placing the determination of exposure on a scientific basis, and their first work was to devise forms of actinometers for measuring the power of daylight.

Since the sensitiveness of the material enters into the question of exposure, they became interested in this subject and defined the amount of exposure necessary to produce a given result as the "inertia" of the plate. From this work and that on the actinometer was developed a calculating slide rule for finding exposures, which they called the "actinograph". The necessity for finding the inertia led to a study of the relation between the silver deposit in the photographic plate and the exposure.

H. and D first defined the terms "transparency", "opacity" and density", which are based on Beer's law, and then defined a theoretically perfect negative as one whose various gradations transmit light in inverse ratio to the light emitted from corresponding parts of the original. For experimental work on this subject they required a photometer. Their earliest form of photometer based on Lambert's law was not entirely satisfactory, but they later designed the well-known photometer.

In the same way various methods of exposure were tried until finally they developed the sector wheel instrument. By the aid of these instruments they discovered the laws which govern the relation between density and exposure, and plotted the well-known H. & D. characteristic curve of the plate, at the same time discovering the nature of the development factor, which was termed by them "gamma".

They showed that the density ratios due to exposure were unalterable by variation in the time of development, and that the exposure curve fell into four periods, under-exposure, correct-exposure, over-exposure and reversal. They were able to give a complete mathematical expression of the relationship between exposure, development and density, and invented practical methods of determining numerically the inertia and consequently the speed of a plate. As a result of this work, they published, in May, 1890, their classic paper on photo-chemical investigations containing a selection from the more important of the results which they had obtained.

#### An Intensity Scale Photometer

A. Odencrants 016

Nordisk Tidskrift för Fotografi, May, 1918, p. 65

Discusses the use of the sector wheel and the Goldberg wedge, and recommends the latter. Illustration is given showing the use of such a sensitometer in determining the effect of light on the ordinary and orthochromatic plates through various filters. Suggests two wedges, one with scale of 1 to 60 for determining sensitiveness, and the other 1 to 1000 for determining gradation, and states that the steps should show narrower differences than those of the Scheiner photometer.

#### A Convenient, Accurate Photometer for the Measurement of Photographic Densities

016-2915

D. E. Benson, W. B. Ferguson and F. F. Renwick

Phot. J., April, 1918, p. 155

A photometer suitable for the measurement of both transmission and reflection densities is described. The intensity of light on the comparison side is controlled by variation of the length of path, a single light source or a fixed position being used for the illumination of both sides of the photometric field. The variation in length of path is obtained by the use of a set of movable mirrors sliding on a pair of rigid ways on one of which the scale is mounted. The scale is calibrated to read directly in density values, a range of density from 0 to 1.8 being obtained on the scale, which range may be extended to 2.8 by use of a supplementary density.

#### A Formula for Telephoto Separation

A. Lockett 052

B. J., 1918, p. 291

If  $f_1$  be the focus of a positive lens,  $f_2$  the focus of the negative lens, and  $M$  the magnification in linear diameters, then the separation will be equal to  $f_1 - f_2 + f_2/M$ .

- Hints for the Laboratory Worker G. A. Prager 064  
 Mov. Pict. World, July, 1918, p. 401

A number of useful accessories for the motion picture laboratory worker are described, including a film rack carrier, a fireproof scrap can, a film cutting knife, etc.

- Photographic Method for the Examination G. A. Le Roy 089  
 of Eggs  
 J. Soc. Chem. Ind., 1918, p. 279A

The eggs are photographed directly, while illuminated by an arc or filament lamp. The method is suitable for cold storage eggs, but less so for eggs preserved in water-glass, paraffin, etc.

- Iron Printing Processes C. Priseman 1313 /7  
 B. J., 1918, p. 324

Formulae and directions are given for the ferro-prussiate process, the ferro-gallic process, which gives a black positive from a positive, the sepia process, which gives a copy in white lines on a brown ground from a tracing, and the important true-to-scale reproduction process, by which an exposed but undeveloped blue print can be used to transfer an image to a gelatine coated material so that the image can then be inked up.

- British Dyes: Spectrum Curves of Color Sensitizers 158  
 and Absorption Curves of Filter Dyes  
 B. J. Col. Sup., 1918, p. 28

Photographs made on the wedge spectrograph plates bathed in the sensitizers made by Professor Pope, and of the following filter dyes made under his direction: Auramine, Filter Yellow A, Naphthol Green B, Mandarin Orange, Methylene Blue, Rose Bengale, Para-nitroso-dimethyl-aniline.

- The Portrait Lens and its Adjustments 2638  
 B. J., 1918, p. 290

Describes the construction of the Petzval lens and of the modification patented by Dallmeyer. Instructions are given for the proper placing of the component glasses of these lenses to guide a photographer in reassembling correctly a portrait lens which has been taken apart for cleaning.

- The Liverpool Amateur Photographic R. Shepherd  
 Association  
 B. J., 1918, p. 292

An article dealing with the Society, which is one of the oldest photographic societies, and of which the original journal became the British Journal of Photography. A description is given of the work done by Sayce and Bolton on dry collodion plates.

- The Dealer and the Photographer H. M. Fowler  
 Abel's Phot. Week., July 20, 1918, p. 16

A defense of the dealer.

## Photo-Engraving

- Notes on Engraving Music Plates, Etching S. H. Horgan 07  
 Baths for Photogravure, and the Vandyke Process  
 Inland Printer, July, 1918, p. 468

- Annual Convention of Employing Engravers 07  
 Fully reported in Photo-Engravers' Bulletin, July, 1918

Papers on the problems of materials, labor, prices and business in war-time, were read at this convention at Detroit on June 20-22. Also long paper to prove that photo-engraving is an essential industry.

- The Trials of War-time Engraving 07  
 Process Engrav., May, 1918, p. 67

The report of the annual meeting of the English Photo-Engravers' Association describes the difficulties due to want of material (particularly metals), shortage of labor and other restrictions owing to the war. An appeal was made for the combination of masters and men to advise the government in the problems of reconstruction after the war.

- How to Measure your Stops 07  
 Process Engrav., May, 1918, p. 78

The method published by the Royal Photographic Society in 1901 is described and recommended.

- Mounting the Plate Square Vernon Royle 07008  
 Printing Art, July, 1918, p. 350

Points out the necessity of correct squaring of engravings to prevent absurdity in many pictures. Several illustrations.

- Offset and Lithography 0723  
 Printing Art, July, 1918, p. 377

A new department dealing with this subject is commenced.

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## Physics

- Glasses for Protecting the Eyes W. W. Coblentz and W. B. Emerson  
 from Injurious Radiations  
 No. 93 Technologic Papers of the Bur. Stand.

This paper gives the general characteristics of certain newly developed glasses sometimes used for protecting the eye from radiant energy, especially the infra red. For protecting the eye from ultra-violet light, black, amber, green, greenish-yellow and red glasses are efficient. For shielding the eye from infra-red rays, deep black, yellowish-green, sage-green, gold-plated and bluish-green glasses are most serviceable.

The Application of Dicyanin to the  
Photography of Stellar Spectra

P. W. Merrill

No. 318 Scientific Papers of the Bur. Stand.

It was found that many stellar spectra are sufficiently intense in the region of wave length 8000 A. U. (infra-red) to enable this portion of the spectrum to be photographed, with a moderate exposure time, on plates sensitized with dicyanin. In some favorable instances, spectra could be well observed to 8500 A. U. or possibly greater wave lengths.

Revised Formula for Luminosity Curve  
Solution for Physical Photometry

H. E. Ives

J. Frank. Inst., July, 1918, p. 121

This paper gives revised specifications for the preparation of a solution such that when a layer of it is used to screen two lamps the ratio of their emitted energies measured bolometrically equals the ratio of their candle powers when unscreened and measured visually.

Ultraviolet Transmission of Clear and Cobalt-Blue Glasses

M. Luckiesh

J. Frank Inst., July, 1918, p. 111

Two samples of soda-lead glass, identical in composition except that one contains a small amount of cobalt not present in the other, are found to differ in transmission, in that the cobalt sample is more transparent in the ultraviolet region. Photographs of spectra show a line of the iron spectrum near 3100 A. M. which the blue glass transmits and clear glass absorbs.

The Foot-Candle Meter

C. F. Sackwitz

Trans. I. E. S., July 20, 1918, p. 292

This instrument has a row of small circular translucent windows, whose brightness, due to a controlled lamp beneath, is given on a fixed scale parallel to the row. In a given illumination the white matt surface surrounding the windows may match one of them in brightness, and its illumination in foot-candles is read at the corresponding point of the scale.

On the Correction of Optical Surfaces

A. A. Michelson

Proc. Nat. Acad. Sci., July, 1918, p. 210

The paper deals with a method of correcting optical surfaces such as mirrors and lenses of modern astronomical telescopes by means of the interferometer. (See also "The Astrophysical Journal", June, 1918, p. 283.)

Knife Edge Shadows

R. W. Porter

Astrophys. J., June, 1918, p. 324

A modification of Hartmann's method of examining the surfaces of lenses and mirrors. The shadowgraph is obtained by placing a photographic plate in the cone of light behind the knife edge. Great superiority over the visual method of examination is claimed.

Report of the 1916-17 Committee on Automobile Headlamps

Trans. I. E. S., July 20, 1918, p. 259

The committee reports upon: The requirements of vision, including ideal conditions and limits of tolerance in respect to intensity, distribution, direction and

glare; the optical principles of headlighting, practical headlighting, including road conditions, dimming and tilting lamps, special mirrors and front glasses; safety limitations. The report is technical but not theoretical. It is hoped to point the way toward systematic legalisation and considerate and uniform operation.

### The Absorption of the Atmosphere

A. Boutaric

Ann. de Phys., March-April, 1918, p. 113

This paper is the first part of an investigation on the absorption of the atmosphere, and deals especially with a relation between the atmospheric absorption for solar radiation and the proportion of polarized light contained in diffused sky light. The results show that for equal water vapor pressures the absorption of the atmosphere always varies in the inverse sense to the polarization.

### Notes on the Pulfrich Refractometer

J. Guild

Proc. Phys. Soc., April 15, 1918, p. 157

The paper deals with points to be observed in the use and design of Pulfrich refractometers. A theoretical investigation of the various errors to which measurements are liable is included.

### On the Accuracy Attainable with Critical Angle Refractometers

F. Simeon

Proc. Phys. Soc., April 15, 1918, p. 190

Discussion of the three factors controlling the determination of a refractive index by means of a total reflection refractometer.

### Transmission of Light Through Water

S. L. E. Rose

Gen. Elec. Rev., Aug., 1918, p. 577

A brief account of experiments made to secure data for calculation of illumination involving transmission through water.

### Fundamentals of Illumination Design

W. Harrison

#### Part III. Reflectors and Enclosing Glassware

Gen. Elec. Rev., July, 1918, p. 484

The properties of some of the various materials employed for reflectors or diffusers are described in this, the third installment of the series.

### Fundamentals of Illumination Design

W. Harrison

#### Part IV. Appendix of Illustrative Problems

Gen. Elec. Rev., Aug., 1918, p. 535

An application of principles, to the solution of a few specific problems.

### Comparative Tests of

P. H. Walker and F. W. Smither

#### Chemical Glassware

No. 107 Technologic Papers of the Bur. Stand.

Results show that all of the American-made wares tested are superior to Kavalier and equal or superior to Jena ware for general chemical laboratory use. The samples were subjected to rigid physical and chemical tests.

- Experiments on the Black Body at the Melting Point of Platinum as a Fixed Point in Photometry H. E. Ives  
J. Frank. Inst., July, 1918, p. 122

A hollow cylinder of sheet platinum, with a small slit parallel to the axis, if viewed at an angle of  $20^\circ$  with the diameter through the opening, and if held at the melting point of the metal is a satisfactory standard of luminous intensity and a close approximation to a black body. Under these conditions the brightness is 58.4 candles per sq. cm. Taking 0.00180 as the mechanical equivalent of light this number is in harmony with other physical quantities involved.

- On Graphical Methods of Correcting Telescopic Objectives A. O. Allen  
Phil. Mag., 1918, p. 471

A suggestion for solving graphically equations expressing spherical aberrations and sine error. A templet may be made for any two glasses and shifted on selected coordinates.

- Molecular Frequency and Molecular Number H. S. Allen  
Phil. Mag., June, 1918, p. 445

The third of a series of papers showing the product of molecular number and molecular frequency to be an integral multiple of a "fundamental frequency" common to all elements. This paper discusses a large group of inorganic compounds for which the molecular frequency must be calculated from melting point data by the Lindemann formula. Interrelations of the integral factors confirm the inference that they are associated with the number of valence electrons binding the molecules in the crystalline state.

- Wave Lengths of the Tungsten X-Ray Spectrum E. Dershem  
Phys. Rev., June, 1918, p. 461

In order to detect weak lines in the x-ray spectra, the method is adopted of receiving the radiation reflected (or diffracted) from a rock-salt crystal directly upon a photographic plate. To increase the resolving power of the apparatus the crystal plate is made very thin, for with such a plate the image due to any wave length is narrow, and it is possible to separate close lines. With such an apparatus, using long exposures, and an automatically regulated Coolidge tube photographs are obtained showing, particularly in the L series, more lines in the spectrum of tungsten than have previously been known. A comparison between former values and those given here for the wave lengths seems to bear out the author's claim of accuracy.

- Characteristic X-Ray Emission as a Function of the Applied Voltage B. Davis  
Phys. Rev., June, 1918, p. 433

On the basis of the probability of impact of an electron with the nuclear region of an atom of the Bohr type, and taking the energy resulting from one impact to be that given by the quantum relation, it is possible to calculate the energy emitted in the form of characteristic x-rays from a metallic target. Using probable values of the absorption coefficient of molybdenum for x-rays, and for the decrease in the velocity of electrons penetrating that metal, the author finds a relation between the energy of the emitted x-rays characteristic of molybdenum and the voltage applied to the Coolidge x-ray tube. The theoretical curve lies satisfactorily near to points repre-

senting actual experimental values given in a paper, as yet unpublished, by Mr. B. A. Wooten.

Note on the Grating Space of Calcite and  
the X-Ray Spectrum of Gallium

A. H. Compton

Phys. Rev., June, 1918, p. 430

The wave lengths of characteristic x-rays reflected from gallium are given by Uhler and Cooksey as calculated by means of the angle of reflection from calcite. The author points out that uncertainty in the value of the grating space (or distance between atom layers) gives rise to an unappreciated error in their wave length values. He calculates this grating space directly in terms of crystal structure of calcite and supplies the resulting values of the x-ray wave lengths.

The Crystal Structure of Ice

A. St. John

Proc. Nat. Acad. Sci., July, 1918, p. 193

The crystal structure of ice was investigated by means of x-rays. A photographic method was used. The source of energy was a Coolidge tube. The investigation shows that ice is properly assigned to the hexagonal system, that it consists of four interpenetrating lattices.

The Mechanism of Light Emission

E. P. Lewis

Scientific Monthly, Aug., 1918, p. 97

A popular review of some old and the new theories of the mechanism of light emission.

Celluloid Lantern Slides

A. W. Gray

Science, July 12, 1918, p. 43

A simple method of preparing slides showing diagrams, sketches, tabulated data, mathematical expressions, etc., by writing or sketching directly upon the celluloid. Also a method for mounting the same for use in lantern.

The Covering Power of Pigments, with Special  
Reference to Photographic Prints

F. F. Renwick

Phot. Jour., April, 1918, p. 140

This paper consists of a practical application of some of the theoretical results presented in a previous paper by Channon, Renwick and Storr. A rather complicated expression relating the value of the "reflection density" of a silver deposit when carried on an opaque reflecting surface such as paper with the diffuse density of that same deposit when measured by transmission is developed. The validity of this theoretical expression is tested by several sets of experimental data. The evidence presented indicates that the expression holds very well. The equation includes terms representing the reflecting power of the base, the mass of silver per unit area, the covering power of the deposit and the maximum rejectance of the material.

The paper also contains a criticism of an equation of a similar nature by Jones, Nutting and Mees (Phot. Jour., Dec., 1914, p. 342) based on simpler assumptions, and neglecting certain factors considered in the equation presented in this paper. According to the experimental data presented this simple equation is found to fail to represent the facts both for very low and high densities.

## General and Inorganic Chemistry

Platinum Substitute (Platinum-Gold Alloy) I. L. B. van der Marck  
J. Soc. Chem. Ind., 1918, p. 244A

An alloy containing about 11% Pt and 89% Au is being made under the trade name "Platino". Experiments show the alloy to be very resistant; it is, however, attacked by sulphuric acid containing nitric acid, but is more resistant to caustic potash than platinum. On heating in a smoky flame, it does not become brittle, as is the case with platinum. Its resistance to fused potassium nitrate obviates the necessity of using porcelain vessels for fusions. The cost is about one third that of pure platinum.

Evolution of Hydrogen from Cyanide O. P. Watts and A. Brann  
Plating Solutions  
Science Abst. (Physics), 1918, p. 279

Experiments were made with silver and copper cyanide solutions, with the addition of varying amounts of free KCN, to determine the effect of the latter in producing liberation of hydrogen at the cathode. It was found that the great lowering of the current efficiency of copper and brass plating solutions caused by the addition of considerable amounts of sodium or potassium cyanide is due to the elevation of the potential of the metal which is being deposited, until it equals, and finally exceeds, the discharge potential of hydrogen, so that this gas is deposited instead of metal. The solvent action of cyanide on the deposit is comparatively unimportant. The addition of free cyanide to the silver bath does not produce the marked lowering of efficiency observed in copper and brass solutions. This is due to the fact that the rise of potential of silver with increase of free cyanide is less marked than for copper and brass. Even the addition of 60 gm. of free cyanide per litre leaves the potential of silver considerably below the discharge potential of hydrogen, instead of above this as in the case of brass and copper.

Aluminium and Its Light Alloys P. D. Merica  
Chem. Met. Eng., Aug. 1, 1918, p. 135

A continued article of which this part deals with the chemical and physical properties of the element.

The Rôle of Complex Salts as R. S. Dean and M. Y. Chang  
Electrolytes in Plating and Refining Baths  
Met. Chem. Eng., July 15, 1918, p. 83

An explanation of why complex salts give smoother and more adherent deposits than equivalent concentrations of simple salts. Two conditions were found which must be fulfilled: 1. The presence of a metal other than the one being deposited, which other metal must have a notably lower solution tension than the one being deposited. 2. A salt sufficiently complex that the concentration of the ion being deposited will be so low that its discharge voltage will be above that of the secondary metal.

## Colloid Chemistry

### Ternary Systems and the Behavior of Protoplasm

M. H. Fischer and M. O. Hooker

Science, Aug. 9, 1918, p. 143

The author draws attention to the analogy already noted by several original investigators between the behavior of soaps on the one hand and the bio-colloids on the other.

### Effect of Electrolytes on Gelatine and Their Biological Significance

W. O. Fenn

J. Biol. Chem., 1918, p. 439

### Ionisation of Proteins and Antagonistic Salt Action

J. Loeb

J. Biol. Chem., 1918, pp. 531, 549

Salts with univalent ions assumed to form ionisable swelling compounds, with bivalent metals, non-ionisable compounds.

### Adsorption Compounds and Adsorption. I. The Starch-Iodine Complex

L. Berczeller

Chem. Abst., 1918, p. 1264

The presence of potassium iodide is not necessary to the formation of the complex. Adsorption is more rapid in dilute than in concentrated solution.

### Technical Applications of Nephelometry

P. A. Kobe

J. Ind. Eng. Chem., 1918, p. 556

The first part deals with Kober's modification of the Duboscq colorimeter. In the second, the determination of precipitates in the hydrosol condition is dealt with, by interpolation on standard curves, and a number of reactions available.

### A Modified Mercurial Viscometer for Determining the Viscosity of Volatile Liquids

F. M. Lidstone

J. Soc. Chem. Ind., 1918, p. 148T

Over-pressure attachment to instrument described (J. S. C. I., 1917, p. 270) to make its use possible with volatile liquids. The arrangement is rather complicated and does not appear to offer great advantages over modified Ostwald viscosimeters.

### Current Potential and Stability of Colloids

H. R. Kruyt

Chem. Weekblad, June 8, 1918, p. 714

A series of experimental results is given which confirm the importance of contact electricity and surface charge in conditioning the stability of suspensoids. The results are in a general agreement with the work of Powis.

Change of Color and Dispersity  
in Indicators

H. R. Kruyt and I. M. Kolthoff

Chem. Weekblad, June 8, 1918, p. 717

There is no causal connection between the colloidal character and the color of a substance.

Brownian Movement and Coagulation  
of Colloids from Solutions

H. R. Kruyt and J. v. d. Speck

Chem. Weekblad, June 22, 1918, p. 808

The authors show that Woudstra's theory of the Brownian movement has no bearing on the process of coagulation because Zeigmondy has already supplied the data for applying the kinetic molecular theory of Smoluchowski to the investigations of gold sols; these lead to the conclusion that coagulation is conditioned by two factors; the probabilities of collision and adhesion, or collision of particles respectively.

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## Organic Chemistry

The Use of Sawdust in Paper Making

1411

J. Soc. Chem. Ind., 1918, p. 189R

Review of an article by R. J. Marx, in *The World's Paper Trade Review*, showing that sawdust can be used for paper making, and that it may pay to do so, under the present conditions, in mills located near to sawmills; but that it is highly improbable that its use will be feasible when the scarcity of mechanical wood pulp is relieved.

Color Reaction of Mechanical Wood Pulp  
or of the Incrusting Substance of Wood with Phenyl-  
hydrazine Hydrochloride

S. Jentsch 1411

J. Soc. Chem. Ind., 1918, p. 365A

Ligno cellulose combines with phenylhydrazine hydrochloride in aqueous solution giving an orange yellow color, changing to bright green upon drying with free exposure to air. Pure cellulose fibers are colored pale yellow, changing to light brown upon drying. Author claims that the coloration is more definite than that produced by phloroglucinol and hydrochloric acid.

The Inhibiting Effects of Water  
on the Interaction of Aluminium with  
Fatty Acids, Phenols and Alcohols

R. Seligmann and P. Williams

J. Soc. Chem. Ind., 1918, p. 159T

It has been previously shown by the same authors that anhydrous acetic acid vigorously reacts with aluminium, but that the presence of a trace of water inhibits

the reaction. It is now shown that a similar phenomenon takes place with the higher fatty acids, with phenols, and with methyl, ethyl, butyl, amyl and benzyl alcohols, aluminium derivatives of the phenols or alcohols being formed readily in the absence of moisture, but no action taking place when moisture (merely that from atmospheric air) is present.

## From Eastman Kodak Research Laboratory

A New Method of Obtaining Dye Toned Images

J. I. Crabtree

by the Use of Copper Ferrocyanide as a Mordant

Phot. J. Am., 1918, p. 338

Mot. Pict. News, Aug. 17, 1918, p. 1104 and Aug. 24, p. 1278

Communication No. 72

As a result of a search for mordants of basic dyes other than silver iodide, it was found that by replacing more or less of a silver image by copper ferrocyanide, by toning in the usual copper toning bath, washing, and then immersing in an acid solution of a basic dye, dye toned images were obtained.

The usual copper toning bath consists of a solution of copper ferricyanide dissolved in a suitable solvent such as a solution of an alkaline salt of citric, tartaric, or oxalic acid together with other salts. On immersing the silver image in such a bath the silver reacts with the copper ferricyanide and is converted to silver ferrocyanide, while copper ferrocyanide is formed simultaneously in combination with the image.

On immersing this image in a solution of a suitable basic dye, a composite image is obtained consisting of a mixture of silver, silver ferrocyanide, copper ferrocyanide and the dye, so that the color of the toned image produced is of a color intermediate between that of the dye and the copper compound depending on the relative proportion of each. The amount of copper salt necessary to mordant the dye is usually so small that the resultant tone differs but slightly from that of the dye itself. After toning in the copper toning bath for a few minutes, the positive is washed for ten minutes and immersed in the dye solution which contains a little acid. After dyeing only a mere rinse in water is necessary before drying.

If the highlights are stained, the positive should be washed for five or ten minutes, or until clear. Stained highlights are caused either by insufficient washing after toning, too strong a dye bath, or an incorrect amount of acid in the dye bath.

Satisfactory tones may be secured with the following dyes: Tannin, Heliotrope, Thioflavine, Victoria Green, Methyl Green, Methylene Blue, Chrysoidine, Methyl Violet.

Intermediate dye tones may be obtained by mixing two or more dyes, and pale tones by giving a short bath in the copper solution and fully dyeing, or by toning for a longer time and giving a short immersion in the dye bath.

A feature of the toned images produced in the above manner is their transparency. The transparency depends on the composition of the copper toning bath and on the fineness of grain of the silver image to be toned. For toning lantern slides, the best results are obtained on the "slow" variety of plates, which are usually of fine grain.

A Test for Wool

H. Le B. Gray

J. Ind. Eng. Chem., 1918, p. 633

The fibers to be tested are put on a microscopic slide and a drop of 30% Na OH sol. is applied. Heat gently to boiling and remove immediately. Examine under microscope. Wool swells and is full of minute bubbles.

## Books

### Recent accessions to the Library:

#### Organic Chemistry for the Laboratory

W. A. Noyes

Third Edition (1916). A text book of practical organic chemistry differing in several important particulars from the usual run of such manuals. Thus, the order in which the preparations are described is not, as is usual, one of increasing complexity, but rather that of the classes of compound discussed in a text book of theoretical organic chemistry. Another and very valuable feature is the excellent list of references to the literature to be found at the beginning of each preparation. The examples are well chosen and obviously described from first-hand experience.

#### The Manufacture of Intermediate Products for Dyes

J. C. Cain

First Edition (1918). A most timely and valuable compilation, a work for which the author is particularly well qualified by his wide knowledge of the technical literature acquired in the dye industry and as editor of the *Journal of the Chemical Society*. Between three and four hundred substances are discussed, some of them in considerable detail. Diagrams are given of several of the more important types of plant apparatus.

#### Bulletins Engineering Department, National Lamp Works of General Electric Co.

A collection in book form of 22 bulletins issued by this department in recent years on the subject of illumination and lighting.

#### Abstract Bulletin of the Physical Laboratory of the National Electric Lamp Association

Vol. I, No. 1, 1913; Vol. I, No. 2, 1917

A collection of abstracts of papers written by the laboratory staff. Abstracts of 28 papers are contained in No. 1, and 34 in No. 2.

#### American Astronomical Society, Publication Vol. 3

Contains abstracts of all papers read before the Society at its regular meetings, for the years 1913-1917 inclusive.

#### The Language of Color

M. Luckiesh

Hood Meade & Co., N. Y., 1918

In this work the author has collected and presented many interesting facts regarding color and its connection with many phases of life. Chapters are devoted to tracing the significance of color in mythology, its occurrence in nature, the presence of color words in primitive languages, its significance in literature, painting and religion and its uses in the theater. A considerable section is devoted to a consideration of the symbolism of various colors among various races and at different periods of the world's history.

The nomenclature of color is discussed as well as the various psycho-physical theories of color vision. Chapters are also devoted to the presentation of data on color preference and the effective and attention values of colors.

The aesthetics and harmony of color is discussed, and a chapter is devoted to a discussion of so-called color music.

## Patent Abstracts

### U. S. Patents

1269391

O. J. Cooper      K31      K/23

A Motion Picture Camera for Color Photography in which three simultaneous pictures are taken side by side upon a strip of film. The novelty consists in using telephoto lenses in a vertical plane. It is claimed that by the use of telephoto lenses pictures may be taken of objects at a greater distance and produce images of the same size as if they were nearer and with much better background perspective.

1268847

F. E. Ives      K/32-K/45

A System of Color Photography employing some features from both the mosaic screen plate method and the three-color negative method. In the example a two-color screen plate is used, the mosaic elements of which are yellow and magenta. Behind this plate is located a red filter and a red sensitive plate. From the negatives obtained by such a pack or plate-set there are prepared three complementary colored positives which are superposed to provide a polychrome picture. The positives from the mosaic screen plate are made by successively printing with a blue light and a green light.

1269061

N. Dawn      0631

A Method of Taking Motion Pictures in which the pictures are first taken of that part of the scene in which the movement occurs through a mask which covers part of the exposure area. A second series of pictures is then taken of a prepared background in which the subject matter gradually becomes more inactinic and has various irregularities so as to merge with the pictures first taken.

1268729

A. L. Kirkwood      068

A Mechanism for Operating Synchronously a Motion Picture Machine and a Sound Producing Device. There is a double clutch, so that a common source of power drives both means. The two devices are thrown in independently and manually and there is no means for automatically synchronizing them.

1568950

A. C. Fisher, Ass. to E. K. Co.      2103

A Folding Camera in which the lens front and shutter are carried by a pair of links pivoted to the forward end of the bed. The parts are spring-actuated so that the front will be automatically erected when the bed is opened.

1270281

W. F. Folmer, Ass. to E. K. Co. 2105-2153

A Camera Back provided with an opening through which designations may be written and light printed upon the contained film. The opening is provided with a sliding door, beneath which is a spring plate carrying a clamping flange and a cam lug at each side. When the door is slid to open position, it cooperates with the cams to press the plate and flange downward to clamp the film against a support.

1269021

S. Tactkian 215

A Roll Film Camera in which the receiving roll is contained within a cylindrical member. The film passes through an opening in this member and can be cut by a knife element at any desired time. The roll can then be removed and the edge of the unexposed film be clamped by jaws in the newly inserted roll.

1268805

G. W. Topliff, C. Bornmann and E. C. Clark 2152  
Ass. to Ansco Co.

An Automatic Film Winding Camera in which operation of the shutter, either for snapshots or time exposures, will cause the release of a spring, so that the film is wound up and another exposure area placed in focal plane. There is a folding lever arrangement for producing the result desired.

1269432

A. D. Hansen 2153

A Camera for Light-Printing Inscriptions upon Negatives. A roll of translucent material with an opaque coating upon which inscriptions may be written is passed before the sensitive surface and is exposed at the same time that the exposure of the negative is made, so that the inscription is light-printed simultaneously.

1267358

G. C. Beidler 2177

A Frame for holding books to be copied. The books are supported by spring-pressed platforms, so that each half of the book, as well as the central binding, is separately supported. The book as a whole is pressed flat against a top sheet of glass, so that the upper leaves lie in a common plane.

1268609

J. R. Powell, Ass.  $\frac{1}{2}$  to C. T. Grinstead 217

A Copying and Enlarging Device of simple construction and of box form with a reversing mirror.

1270280

W. F. Folmer, Ass. to E. K. Co. 219

A Camera of the Meter Reading Type employing sensitive paper strips. A mirror is placed behind the lens to project the image onto the sensitive strip laterally, thereby reversing it.

1270203

G. N. Pifer, Ass. to T. E. Stewart 2193

An Improvement in Coin-Operated Automatic Photographing Machines. It includes a special ejector for removing the finished picture from the solution cup.

1269663

R. H. Wappler, Ass. to Wappler Electric Co., Inc. 227

A Refracting Stereoscope for use with large sized stereo pictures such as those obtained in x-ray work. It includes a pair of doubly reflecting prisms.

1270220 G. S. Shaak 227

An Advertising Stereoscope consisting of two sheet metal plates joined at right angles, one of them having spaced holes.

1270302 R. Kroedel, Ass. to E. K. Co. 2541

A Developing Apparatus for Roll Film. It includes a developing tray and a film block insertable therein. This block is provided with a film chamber at one end and a developing recess on its lower face, such recess having film guide slots in its sides which communicate with the chamber. The film is drawn from the chamber along the slots and across the recess. When the block is inserted in the tray, the developer is poured in through a light trapped recess in the block.

1270330 A. A. Ruttan, Ass. to E. K. Co. 2543

A Cut Film Holder comprising a rectangular frame which fits in an ordinary plate holder, so as to clamp the film between it and the septum.

1268406 W. E. Swalm and A. E. Sexton 257

An Apparatus for treating and particularly for washing photographic prints. The prints are held in spaced clamping members at their top edges, so that the liquid can circulate freely and after passing between the spaced prints goes out at the bottom.

1268577 H. C. Jones 262

An Automatic Shutter Device in which a sliding plate having a number of apertures of different sizes passes the shutter during the exposure period, so that the size of the stop is gradually decreased during exposure. The time during which the different sized apertures remain before the shutter is controlled by a magnetic release, which is in turn controlled by an adjustable clock operated switch, so that the time of exposure through each aperture can be varied as desired.

1270311 P. J. Marks, Ass. to E. K. Co. 2623

A Photographic Between-the-Lens Shutter of the setting type, in which the tension of the master spring may be conveniently varied at the factory to correct the timing.

1268724 R. Johnson 2653

A Film Spool with a wooden core and cardboard ends, the cardboard ends being held in place by sheet metal barbs.

1269008 G. A. Riggs, Ass. to E. K. Co. 2653

A Sheet Metal Film Spool comprising a tubular hub having at its ends outwardly turned radial flanged sections and end disks having notched flanges crimped thereover.

1269365 T. Baker, Ass. to E. K. Co. 2653

A Sticker attached to the free end of a film in the usual form of roll film cartridge, the sticker being rather long and being gummed only at the edges with an ungummed portion in the middle, to avoid premature adhesion.

1270614 J. S. Harmon, Ass. to E. K. Co. 2653

A Sheet Metal Film Spool comprising a pair of semi-cylindrical shells joined to form a tubular hub with shouldered flanges seated on the ends thereof. The ends of the shells are provided with inturned portions to form a slot for engagement by the winding key.

1269457 H. S. Killgore 2657

A Frame for Photographic Films to be used in submitting films to baths. A series of frames having grooved edges, each frame holding one film. Each frame may be separately supported by a pin-clasp, or the separate frames without the pin-clasp may be held in a rack and the rack as a whole placed in the tank or bath.

1270612 W. M. Green 315

A Motion Picture Camera which may also be used as a projector. It is provided with an ordinary T. B. I. automatic between-the-lens shutter which is operated in time with the film by means of a vibrating lever. When the apparatus is used for projecting, the shutter is set to the open position and turned out of operative relation with the lever.

1267412 A. S. Howell, Ass. to Bell & Howell Co. 3201

An Actuating Mechanism for driving motion picture films intermittently, the films being of the type having a row of perforations along one edge only.

1269999 W. Beckwith 3204

A Reel for Motion Picture Films in which part of one side flange and part of the hub are fastened together and hingedly connected with the rest of the reel. When in position, the hub part automatically clamps the end of the film between it and the rest of the hub.

1270115 H. Carpenter 3204

A Take-Up Reel for Motion Picture Projectors in which the film is wound from the outside inwardly, thereby avoiding the usual rewinding process.

1269496 J. A. Orange, Ass. to General Electric Co. 3205

A Condenser for Projecting Apparatus which uses incandescent lamps, the filaments of which form an illuminated grid. The condenser is unsymmetrical or astigmatic, so that an image of the lamp grid in a direction parallel to the filaments is focused at the aperture of the gate and the image in the direction perpendicular to the filament is focused at a point beyond the gate. The object is to lessen the loss of light while keeping the illumination even.

1269366 F. W. Barnes, Ass. to E. K. Co. 3209

A Motion Picture Machine and Film therefor in which the film has slight notches along the edges in staggered relation with the driving perforations. The apparatus has lugs or projections to engage these notches. This is to be used for non-inflammable film and the machine will not work properly with the ordinary straight edge film.

1269046 A. D. Brixey 324

A Projection Screen consisting of glass platinized upon its rear surface and backed by a translucent plate. The picture is thrown from the rear of the screen and the observer upon the front is said to perceive the colors more truly and with less glare than on the ordinary screen with high reflection.

1269552 M. Blumenberg, 324  
by judicial change of name to Moxley Hill

A Motion Picture Screen for use in shooting galleries. It comprises an endless band passing over guide rollers and a tension roll,

1270061 E. Schneider 366

A Flexible Shaft for operating motion picture cameras particularly when used without a tripod.

### British Patents

115971 J. L. Mauch 057-2171

Copying Documents, etc., An apparatus for copying written or printed surfaces, designs, pictures, etc. Comprises a casing forming a bent mouth in which is drilled a transparent or translucent roller, the film passing from a spool on to the roller and the surface to be copied to a spool. The apparatus is traversed over the surface and light from electric lamps passes through the roller and film to the surface, whence it is reflected to a greater or less extent back into the film.

115678 P. M. Pierson 0649-387

Renovating Picture Films. In a machine for restoring kinematograph films, the film is transmitted in frictional contact with cleaning webs. The film passes from a drum over a table, and is acted on by webs, moved in the same direction as, or oppositely to, the film, these webs being preferably provided with a solvent or material which cleans the film. After passing round a feeding-drum, the film passes over a table between moving webs, and is wound on a drum. The film and webs are pressed together on the tables by weights loosely mounted on rods.

115942 H. Pedersen 069-323

Combined Phonographs and Cinematographs. In a process for recording or reproducing sounds simultaneously with the taking or projecting by cinematograph apparatus of the associated pictures, the sounds are recorded photographically on the margin of the negative picture film, and are then transferred to the positive picture film, forming thereon an undulatory record which engages with a stylus connected to a microphone for the reproduction of the sounds. The sounds uttered during the exposure of the cinematograph film are received by microphones connected in circuit with a telephone receiver, the diaphragm of which oscillates an apertured plate lying over the margin of the film. Light projected through a lens and reflected by a mirror causes a wavy sound-trace to be formed on the sensitive film, the sound-trace becoming black on development. A metal strip coated thinly with chromate gelatine, preferably colored blue, is then exposed beneath the film edge, and the chromate-gelatine washed off along the trace, which is used as a matrix for impressing

the rear face of the finished cinematograph film. In reproducing the sounds and pictures, the sound-trace engages a stylus, carried on a lever having at its outer end microphonic contacts comprising fine pointed wire brushes. The resulting variations of current in the microphone circuit vary the excitation of an electro-magnet near the picture screen. The magnet preferably controls a valve in a column of compressed air or a steam jet, which is thereby caused to emit the sounds. The sound recording apparatus engages the film at a point at which the motion is uniform.

116146

C. K. Milles 069-323

Electric Synchronizing-Apparatus. Two or more entertainment mechanisms, such as cinematograph machines; phonographs, piano-players, etc., are kept in synchronism by mounting on each shaft a dynamo-electric machine of which the rotor windings are arranged in series with a source of alternating current and the stators have interconnected multi-phase windings; and means are provided for regaining synchronism when disturbed.

115593

S. J. Waters 0726

Photographic Stencils. For the production of a photographic stencil to be used in the production of manuscript, drawings, etc., the matter to be copied or a photographic negative from it is printed on a carbon tissue, which is then transferred to a waxed temporary support. After development the print is transferred from the temporary support to a sheet of thin rice paper, lawn, silk or similiar material, and is used as a stencil in a copying apparatus, the ink penetrating through the backing where the backing is not protected by the gelatine. For half tone reproductions the negative must be made through a half tone screen.

115136

E. Duerr 083-219

Cameras. A camera especially for taking photographs from aeroplanes, is traversed over a stationary shutter provided with an aperture.

115593

083

Photographs of shells in flight. W. Block in the "Central Zeitung für Optik und Mechanik", January 20, describes a method of photographing shells in flight by a cinematograph camera having a specially broad film. The film moves forward in jerks, the photographs being taken when it is stationary, through a rotating screen having thin slits cut in it. The length of exposure is varied by varying the widths of the slits. Since, however, the time between the successive stationary positions of the films is too great in comparison with the rate of motion of the shell, numerous slits are cut in the screen, and several exposures are made on the same portion of the film so as to show the projectile in various stages of progression.

166084

H. F. Maynes 2153

Photography. Relates to cameras provided with means by which any one of a number of identification marks may be wholly or partially perforated or imposed upon the film. The film holding portion of the camera carries near its edge a number of punches, passing through guide-holes in the plates, and normally raised by means of a spring engaging shoulders thereon, but which, on depression, will perforate the film. The apparatus may be used for perforating the films either before or after removal from the camera; or the apparatus may be used independently of the camera,

for which purpose the back of the camera, with the apparatus thereon, is removed and the film passed through between the anvil and back. In modified arrangements, the markings are impressions which do not perforate the film.

155344

Vickers, Ltd. 222-046

**Photographic Enlarging.** In a method of and means for reproducing selected pictures from a kinematograph negative film, the film is placed in an ordinary projector arranged to focus the pictures on a sliding shutter closing the aperture of a light-tight box. The projector is stopped when a suitable picture appears, and the shutter is withdrawn, springs then moving a frame carrying bromide paper or other sensitive material into position against stops. The paper may be carried by rolls, the winding gear of which is provided with a catch which prevents operation until the shutter has been closed.

115284

G. C. Singleton 225-315

**Optical Appliances.** Apparatus for viewing kinematograph pictures comprises a case containing a plane mirror, and the lid of which carries a convex mirror. A ground-glass screen may be provided. In a modification forming a camera, the screen is made opaque and provided with a pin-hole, the case being extended to accommodate a photographic plate.

116095

G. S. Lalin 2645

**Photography.** In a focusing finder of the kind comprising a reflecting mirror and focusing screen, the screen and mirror are so arranged that they may be folded into a position parallel to one another when out of use.

## German Patents

303144

E. Schering for Chem. Fabr. B13

**Preparation of Developing Papers free from Stick Marks.** Addition to German Patent No. 295502. To prevent stick marks on developing papers, etc., with baryta-coated supports, albumin is added to the baryta mixture.

304737

W. Scheffer C

**Preparation of Photographic Emulsions.** The light-sensitive salts are produced as fine grained precipitates by allowing the reacting solutions to come into contact at a dialysing membrane. The solutions may be at different temperature and pressures, and two or more dialysing membranes may be used.

302817

Kraft und Steudel Fabr. J 81

**Palladium Toning of Silver Chloride Emulsion Papers.** The toning bath contains at least 0.3% of concentrated hydrochloric acid and 1% of alum, e. g., potassium chloro-palladite, 1 grm., hydrochloric acid, 5 cc., alum, 15 grms., and water up to 1500 cc. The hydrochloric acid prevents the formation of yellow stains in the gelatine film and the paper by precipitation of palladium hydroxide, and the formation of an opalescent fog especially in the shadows; the alum prevents softening of the gelatine, and, not being completely removed by washing, is effective also in the

fixing bath. There must be at least 10 minutes washing between the toning bath and the fixing bath, which latter is a solution of ammonia, e. g., about 30 cc. of concentrated ammonia per liter.

301929

R. Riedler 089

Process for the Production of Photographic Pictures on Silver Mirrors. A silvered glass plate is coated with a light sensitive film such as caoutchouc and asphalt, exposed under a line or half-tone negative, developed in acetone or the like, etched through to the glass with any suitable solvent of the silver film and then coated with a colored backing as desired.

302786

R. Kogel 9

Process for Photographic Preparation of Positives. The printing film contains a light sensitive diazo compound which can be developed by amines or phenols to a stable azo dye, but loses this property on exposure to light. Where the effect of exposure is not visible a print-out image may be obtained by the addition of a suitable bleach-out dye. If a suitable de-sensitizer or fixing bath be employed, this dye helps to strengthen the picture. (This process appears to be identical with the 'primuline' process.)

# Monthly ABSTRACT Bulletin



October, 1918

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**EASTMAN KODAK COMPANY**  
Rochester, New York

T. F. Currier,  
Belmont

# Monthly Abstract Bulletin

Vol. 4, No. 10

October, 1918



## Photography

Cosway Borders

E. A. S. J3-243

B. J., 1918, p. 367

Describes a method of applying the registering stops when printing in border negatives.

Single Solution Sepia Toning: Views and Reviews. II.

J-84

B. J., 1918, p. 334

Editorial article describing the various methods which have been suggested for single solution toning, including a selenium process, the use of liver of sulphur and poly-sulphides, toning by acid hypo solution in the cold and the Kropf process of toning with arsenic.

Red-Chalk, Purple-Red, and Blue Tones on Bromide  
and Gaslight Papers, from the Rajar "Trade Notes"

J-84

B. J., 1918, p. 370

Gives formulæ for obtaining these colors by gold toning after sulphide or hypo alum toning.

Decennia Practica—Color Photography

K/3

B. J. Col. Sup., 1918, p. 31

Processes of Making Color Screen Plates. This section deals with patented processes for making color screen plates.

The Preparation of Prints for Coloring

Burlington L5

B. J., 1918, p. 355

The article contains a number of formulæ for preparing matte and glossy prints for coloring, methods for the use of dyes, water colors, oil colors, crayons, and wax colors being given.

Methyl-Violet as a Red-Sensitizer of the  
Photographic Plate

U. Yoshida 1581

Memoirs of the College of Science, Kyoto  
Imperial University.—Reprint.

The author finds that methyl-violet in a 1 in 10,000 solution in alcohol containing ammonia sensitizes photographic plates to red light, the sensitizing maximum being at 6400A.U. The sensitiveness conferred is not very great but is sufficient to be useful.

## Chrome Alum Bath for Films and Plates

164

Studio Light, Aug., 1918, p. 18

The following formula is recommended as an alternative to the regular formula containing acetic acid:

Water,	-	-	-	-	-	-	-	-	-	6 gals.
Hypo,	-	-	-	-	-	-	-	-	-	21 lbs.

When thoroughly dissolved, add the following hardening solution while stirring briskly:

Water,	-	-	-	-	-	-	-	-	-	1 gal.
Sodium Bisulphite,	-	-	-	-	-	-	-	-	-	2 lbs.
Chrome Alum,	-	-	-	-	-	-	-	-	-	$\frac{1}{2}$ lb.

When the hardener has been added to the hypo solution, add enough water to make 10 gals.

## Background Service

M. Levy 272

B. J., 1918, p. 336

The author recommends the abolition of backgrounds on stands and the use of a very simple series of backgrounds attached to the wall of the studio.

## The U. S. School of Aerial Photography

Studio Light, Aug., 1918, p. 15

Illustrations showing the Interior of the U. S. School of Aerial Photography, situated at Kodak Park.

The price of plates in Great Britain has been increased again, the price being about three times that prevailing before the war. The manufacturers also require that at the time of purchase, glass equivalent to 75% of the new plates purchased must be returned at fixed prices.

B. J., 1918, p. 363

## Photo-Engraving

## Standardizing Costs

H. C. Jones 07

Phot. Engrav. Bull., Aug., 1918, p. 3

An appeal for the use of various inventions, and a more careful way of working mechanically to produce satisfactory half-tone engravings.

## Non-Burning Paper Formula

Inland Printer, Aug., 1918, p. 596

Make solution of

Ammonium Sulphate,	-	-	-	-	-	-	-	8 parts
Boric Acid,	-	-	-	-	-	-	-	2 "
Borax,	-	-	-	-	-	-	-	2 "
Water,	-	-	-	-	-	-	-	100 "

Heat solution to 120° F., dip paper in it and dry.

## Silicon Iron Waste Pipes

S. H. Horgan

Inland Printer, Aug., 1918, p. 625

It is stated that if alloy made of iron with 12 to 19 per cent silicon, is used for pipes, they will resist the corrosive action of nitric, muriatic and sulphuric acids. (This alloy is commercially known as "duriron".)

## Physics

On Preferred Proportions in Combining General and Localized Lighting

F. C. Caldwell and W. M. Holmes

Trans. I. E. S., Aug. 30, 1918, p. 303

In a room with dark walls and light ceiling, the total illumination upon a reading desk was kept constant, and the relative amounts due to the general lighting of the room and to a desk lamp with diffusing screen, were varied. The judgment of one hundred observers indicated that the lighting was most satisfactory when the percentage of direct light upon the working surface was about 45.

An Integrating Hemisphere

F. A. Benford, Jr.

Trans. I. E. S., Aug. 30, 1918, p. 323

A theoretical and experimental justification of the use of an integrating hemisphere instead of an integrated sphere in the photometry of relatively large surfaces. The author describes his results as encouraging if not conclusive.

The "Astronomical Atom" and the Spectral Series of Hydrogen

F. Sanford

Astrophys. J., July, 1918, p. 1

By "Astronomical Atom" is meant an atom with central positive nucleus surrounded by rotating negative electrons. It is assumed that orbital rotation of the electrons produces light waves. It is found by calculation that the two spectral series of hydrogen can only be explained on the assumption of two kinds of hydrogen atom, one in which the nucleus charge is  $e$ , the other in which it is  $2e$ . The difference between these atoms is that the latter has lost an electron.

On Some Phenomena Observed in the Foucault Test

S. Banerji

Astrophys. J., July, 1918, p. 50

In the Foucault test, when the illumination is with white light, as the knife edge advances through the focus, a remarkable succession of color effects is observed. This is explained by the writer, following the mathematical theory developed by Rayleigh. The case where the advancing knife edge is not exactly at the focus is also treated mathematically at length.

On Tracing Rays Through an Optical System  
(Second Paper)

T. Smith

Proc. Phys. Soc., June, 1918, p. 221

Contains modifications of the formulæ given in the first paper adapting them so that, if desired, the calculations could be carried out mechanically.

The Reflected Images in Spectacle Lenses

W. B. Rayton

J. Optical Soc. America, 1917, p. 137

A complete geometrical treatment of the subject of the troublesome reflected images seen with spectacle lenses. It is shown that there are five principal reflected images to be considered, two of which are due to corneal reflection. Each one is treated at length. It is shown how a certain measure of relief may be obtained in the case of any single reflected image.

## A Mathematical Study of a Headlight Beam

O. E. Conklin

J. Optical Soc. America, 1917, p. 155

The writer derives formulæ for the position of light-beams reflected from parabolic mirrors. With these as starting points he proceeds to determine the light distribution in the reflected beam when the source is respectively a straight and V-shaped filament. He concludes that from a driving standpoint the straight filament is the best, giving a wider and more constricted beam than the V-shaped filament.

## A Statistical Survey of Color Vision

R. A. Houstoun

Proc. Roy. Soc., 1918, p. 576

A statistical study of color vision, in which an attempt is made to determine whether, with respect to color vision, there are two distinct classes of persons, or whether color blindness is not due to the absence of one of three color sensations but may prevail in all degrees up to normal. The results on seventy-nine observers do not furnish sufficient ground for conclusions.

Production and Measurement  
of High Vacua

J. E. Schrader and R. G. Sherwood

Phys. Rev., July, 1918, p. 70

The authors describe improved forms of the mercury diffusion pump and Knudsen gauge by means of which degrees of exhaustion represented by pressures less than  $10^{-4}$  mm. of mercury have been secured and measured.

Derivation of the Newtonian Constant  
of Gravitation in Terms of the  
Properties of Electrons

A. C. Crehore

Phys. Rev., July, 1918, p. 13, and

On the Supposed Gravitational Attraction  
Between two Revolving Electrons

G. A. Schott

Phys. Rev., July, 1918, p. 23

In the first of these papers, Mr. Crehore computes the value of the gravitational attraction between two masses, making a use of a previously obtained value of the attraction between two electrons revolving in distant orbits. In the second paper it is shown that the value obtained for this attraction between electrons depends upon a faulty process of averaging, and that in fact no such attraction exists. However, since Mr. Schott evidently had not seen the present paper, he does not explain how Mr. Crehore managed in spite of his mistake to get as good a value for the gravitation constant as he did.

The Production of a True Optical  
View by Means of Stereoscopic Roentgenography

E. G. Beck and E. D. Smith

Amer. J. Roentg., August, 1918, p. 369

The paper discusses the physiological basis of stereoscopic vision. The eyes endeavor to focus the image on the fovea, and thus a definite convergence of the eyes is brought about. Experience associates with this size and distance of object. The discussion is occasioned by a reference to a previously described method for producing and viewing stereoscopic Roentgenograms, which in itself shows no new points of interest.

## The Absorption of X Rays

E. A. Owen

Proc. Roy. Soc., 1918, p. 510

The absorption coefficients of several substances for a radiation of wave-length  $0.586 \times 10^{-8}$  cm. have been determined and agree with the values by Bragg and Pierce.

The atomic fluorescent absorption coefficient was found to be approximately proportional to the fourth power of the atomic number of the absorber, and to the cube of the wave-length. This relation is independent of the scattering coefficient.

Calculations based on the above general relation show that the molecular total absorption coefficients of different substances observed by Auren with wave-length  $0.35 \times 10^{-8}$  cm. may be deduced very approximately from the atomic total absorption coefficients obtained for different elements with wave-length  $0.586 \times 10^{-8}$  cm. if the scattering coefficient be assumed constant and of value 0.2 for all elements from hydrogen to bromide for both radiations.

## Electronic Frequency and Atomic Number

P. D. Foote

Phys. Rev., Aug., 1918, p. 115

This paper discusses the conclusion of H. Stanley Allen that the product of atomic number and atomic frequency is an integral multiple of a fundamental frequency common to all elements. The author doubts this conclusion because numbers taken at random seem to come as near being integral multiples of a common factor as do the molecular products.

## Note on the Location of the Spectrum

H. E. Ives

Formed by a Plane Transmission Grating

J. Optical Soc. America, 1917, p. 172

It is shown how to locate the plane of the spectrum formed by a plane transmission grating. If a wave-length scale is placed in this determined position, there will be no parallax, and wave-lengths can be read off conveniently and accurately.

## The Variation with Temperature of the

A. S. King

Electric Furnace Spectra of Calcium,  
Strontium, Barium and Magnesium

Astrophys. J., July, 1918, p. 13

The furnace spectra of calcium, strontium, barium and magnesium are investigated comparatively at low, medium and high temperatures, taken at  $1650^{\circ}$ ,  $2000^{\circ}$  and  $2350^{\circ}$  C. respectively, with especial reference to the appearance and increase of brightness of spectral lines with temperature. The results of the investigation cannot be summarized.

On the Effect of a Magnetic  
Field upon Cathode Rays

L. T. Moore and L. M. Alexander

Phys. Rev., July, 1918, p. 1

This paper gives conclusive evidence that the effect of a magnetic field upon cathode rays is "to change the paths of the negative particles of the cathode rays into helices". This is in refutation of Righi's contention that "the magnetic field creates and makes stable a stream of electrically neutral doublets".

## Some Properties of Metals

A. G. McGougan

## Under the Influence of Alpha Rays

Phys. Rev., Aug., 1918, p. 122

The author concludes that the emission of electrons from the surface of metals bombarded by Alpha particles is a surface effect, due to a gas film either condensed from the imperfect vacuum or diffused from the interior of the metals.

On the Absorption of X-Rays in Copper  
and Aluminium

C. M. Williams

Proc. Roy. Soc., 1918, p. 567

In the experiments here reported, homogeneous beams were obtained by reflection from a rock salt crystal of the radiation from a Coolidge tube the voltage applied to which was closely adjusted. By means of a double ionization chamber the effects of variation of intensity were eliminated. Tables of data are given, and curves show striking discontinuity at wave-length 0.49 A. U.

Resonance and Ionization Potentials  
for Electrons in Metallic Vapors

J. T. Tate and P. D. Foote

Phil. Mag., July, 1918, p. 64

A hot cathode is enclosed within a cylindrical grid and anode, and the space filled with metallic vapor at  $10^{-6}$  cm. pressure. An accelerating potential is applied to cathode-grid and a retarding potential to grid-anode. Measurements are made of total current from cathode and partial current to anode. Discontinuities in slope of these values plotted against applied voltage show very definitely not only the ionization potential but also "resonance" potentials. These are velocities which are just sufficient for the electron to lose its energy on collision with the metallic vapor. The consequent emission of radiation is at a frequency characteristic of the metal. The paper shows a remarkable agreement between these values of potential and known frequencies with the help of the quantum relation. Cadmium, zinc, sodium and potassium were investigated.

Extreme Ultra Violet Spectra  
of Hot Sparks in High Vacua

R. A. Millikan and R. A. Sawyer

Phys. Rev., Aug., 1918, p. 167

This is a preliminary report on successful photographic measurements of wavelengths in bright line spectra, with the aid of a new vacuum spectrometer.

Remarks on a Paper by Arthur H. Compton, entitled  
"Note on the Grating Space of Calcite and the  
X-Ray Spectrum of Gallium"

H. S. Uhler

Phys. Rev., July, 1918, p. 39

A successful defense and counter attack.

## Illumination and Its Measurement

Mot. Pict. News, Aug., 1918, pp. 1274, 1412, and Sept., p. 1578

An elementary treatise on the units and methods of illumination measurement. A convenient and portable foot-candle meter is described.

## General and Inorganic Chemistry

Aluminium and Its Light Alloys

P. D. Merica

Chem. Met. Eng., Aug. 15, 1918, p. 200

The second of a series of articles from the Bureau of Standards in which the physical and mechanical properties of aluminium alloys are discussed.

## Analytical Chemistry

New Method of Rapidly Destroying  
Organic Matter

P. Duret

Comp. Rend., July 16, 1918, p. 129

By means of dilute sulphuric acid and ammonium persulphate. Ease and simplicity of manipulation and rapidity of action are claimed.

The Perchlorate Method for the  
Determination of the Alkali Metals

F. A. Gooch and G. R. Blake

Chem. News, 1918, p. 196

When the weight of alkali-metal perchlorate much exceeds 0.1 gram, it is best to redissolve in a small quantity of water, and re-evaporate with perchloric acid. For washing and transferring the precipitate, the smallest possible volume (about 25 cc.) of alcohol containing 0.1% perchloric acid is used.

## Colloid Chemistry

Invention of De-inking Newsprint Paper

J. H. Werst

Paper, March 13, 1918, p. 23. Cf. U. S. Pat., 1249575

Froth and foam were once symbols of uselessness. Now, however, to the flotation of minerals, the dyeing of fabrics and the extinction of fire by foams, is added a process of de-inking newsprint paper, by utilizing a foam of two immiscible liquids which involves the use both of powerful mechanical agitators and a chemical stabilizer.

## Organic Chemistry

The Yellowing of Paper

A. B. Hitchins

A Study of the Causes or Principal Factors  
Producing the Yellowing of Paper

Paper, July 24, 1918, p. 11

The tests were made on hand-made paper from finest white rags, using chemicals of the highest purity. Three tests were employed; are light, moist heat in darkness and dry heat in darkness. Samples consisted of plain, rosin sized, rosin plus iron, and rosin plus iron plus gelatine. The plain paper was practically unaffected, the yellowing increasing through rosin, rosin plus iron and rosin plus iron plus gelatine. Light produced the maximum effect, then moist heat, then dry heat.

# Moisture Regain of Papers at Different Humidities

O. Kuss and G. C. McNaughton

Paper, Aug. 21, 1918, p. 20

Chart and tables are given. There appears to be a general tendency for the longer fibered or more hydrated stock to absorb more than the shorter fibered stocks.

# Waterproof Composition for Paper

P. B. Kueffler

Paper, Aug. 21, 1918, p. 20

Consists essentially of forming an ammonium soap of stearic acid in the presence of paraffin which becomes emulsified. See patents Nos. 802520, 1266955 and 1266956.

# Dye Stuffs

L. J. Mátyos

J. Frank. Inst., Aug., 1918, p. 187

This is an interesting and popular outline of the processes of dye manufacture. It takes up particularly the coal tar products, considers the commercial situation, and sets forth the functions in dye works of men of different trainings. The author naively remarks that the German chemical companies will not permit the manufacture of certain dyes to continue in America after the war.

## From Eastman Kodak Research Laboratory

### A Portable Apparatus for Developing

J. I. Crabtree 32

Motion Picture Film at Normal and at High Temperatures

Mot. Pict. News, Sept., 1918, pp. 1582, 1742

Communication No. 74

By an application of the apron method of developing film as adopted in the Kodak Film Tank outfit, a portable and compact apparatus has been devised for the development of motion picture film, while by applying the method of developing at high temperatures as described in Communication No. 62 (B. J. 1917, p. 555), it is possible to develop motion picture film up to temperatures as high as 95° F. In view of this and the portability of the apparatus it is hoped that the method will be of particular value to explorers travelling in tropical countries who must develop their film as soon as possible after exposure and under existing conditions.

The apparatus consists of a celluloid apron somewhat wider than the width of motion picture film, and suitable reeling and developing tanks, the film being wound onto the apron, developed, fixed and washed in the apron, and finally dried by transferring to a frame rack in the usual way.

The formula for the T<sub>8</sub> developer recommended is as follows:

	Avoirdupois		Metric
Paraminophenol hydrochloride or Kodolon, - - -	-	105 grains	7 grams
Sodium Sulphite, (desiccated)	1 oz.	300 grains	50 grams
Sodium Carbonate, (desiccated)	1 oz.	300 grains	50 grams
Water to - - -	32 ozs.		1000 cc.

The time of development with this developer is 1½ minutes at 95° F., but if this is too short and for convenience in working, the time may be extended to three minutes by adding 10% sodium sulphate crystals to the developer before use.

After developing, rinse for a few seconds and fix in the following chrome alum bath at temperatures up to 85° F.:

	Avoirdupois	Metric
Hypo, - - - - -	7 ozs.	200 grams
Sodium Sulphite, (desiccated) - - - - -	1 oz. 175 grains	40 grams
Chrome Alum, - - - - -	2 ozs. 350 grains	80 grams
Acetic acid (28%), - - - - -	150 minims	1 cc.
Water to - - - - -	.32 ozs.	1 liter

Dissolve the sulphite and chrome alum together and add to the hypo solution, finally adding the acetic acid.

At temperatures up to 95° F., the following formalin bath should be employed:

Hypo, - - - - -	9 ozs.	250 grams
Sodium Sulphite, (desiccated) - - - - -	1 oz. 350 grains	50 grams
Formalin, (formaldehyde 40%) - - - - -	4¼ ozs.	125 cc.
Water to - - - - -	32 ozs.	1 liter

First dissolve the hypo, then the sulphite, and finally add the formalin.

When developing at high temperatures it is very necessary to maintain the temperatures of the developer, fixing bath, and wash water the same, otherwise if the film is transferred from a hot to a cold solution or vice versa, reticulation of the gelatine coating is liable to occur.

By a slight modification the apparatus could be made suitable for daylight developing, though this would necessitate the carrying of a collapsible box to fit around the reeling apparatus.

The author is indebted to Mr. S. Tulpan for his valuable assistance in the carrying out of the various experiments.

## Absorption of X-Rays by Various Samples of Lead Glass

### Report No. 537

Measurements were made of the absorption of the rays from a Coolidge medium focus tube with six inches equivalent spark length by various samples of lead glass. The following results were obtained:

Material	Absorption per mm.	% Absorption of sample Absorption of metallic lead
Sheet Lead - - - - -	41.0	100%
Lead glass tube shield, - - - - -	12.	51%
Pyrex glass for x-ray work - - - - -	23.5	55%
Lead glass shield for new Coolidge radiator tube - - - - -	39.5	99%

## The Effect of Size of Stimulus on the Contrast

P. Reeves

### Sensibility of the Retina

J. Optical Soc. Amer., 1917, p. 148

### Communication No. 70

The experiments were made with the visual sensitometer devised by Nutting and are of the nature of a continuation of the work of Nutting and Blanchard on the sensitometry of the eye.

Five contrasts and six stimulating areas or test spots were chosen. The contrasts were 0, 0.39, 0.67, 0.87 and 0.97. The sizes of the illuminated test squares were 2, 5, 7, 25 and 30 mm. Neutral film of the necessary opacity placed over half of the square furnished the contrasting areas. For each size of square and for each contrast, the times necessary to see the illuminated area for a number of field brightnesses were noted, from which a double series of curves connecting field brightnesses with time of appearance are obtained.

The Fechner fraction,  $\text{dB/B}$ , is next obtained and plotted as a function of field brightness. A family of such curves is found by varying the adaptation time from 0 to 80 seconds.

Lastly, a simple application of these results is made to the problem of aeroplane detection. The writer concludes that if an aeroplane of 40 feet spread, with a contrast against the sky of 0.97 is just visible at 467 feet elevation, then its contrast would have to be 0.65 at an elevation of 7000 feet for it to remain visible. At 1700 feet its contrast with the same limitations should be 0.87.

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## Books

### Recent accessions to the Library:

Organic Derivatives of Arsenic and Antimony

G. T. Morgan

This work exhibits the same defects, in a greater degree, as the well-known "Organische Chemie" of Richter. The major portion consists of a classified list of compounds, together with the recipes for their preparation; smaller portions are devoted to matters of historical interest; but theory finds practically no space. The author is to be commended for having a full index prepared and for referring to the original literature.

Lecithin and Allied Substances. The Lipins

H. MacLean

A clear and well written presentation of this difficult subject.

## Patent Abstracts

### U. S. Patents

1273457

J. G. Capstaff, Ass. to E. K. Co.

K0642-K/43

A System of Printing on Double Coated Film. Each sensitive layer is protected from the light that exposes the other layer by means of an interposed opaque screen of reduced free silver. The latter is removed during the subsequent treatment of the film, as in the preparation of two-color motion pictures, for example.

1271668

C. J. Coleman

K/31-K/24

An Apparatus for Taking Color Motion Pictures in which alternate red and green-violet screens are used. The exposure through the red screen is longer than that through the green-violet. This is accomplished by mounting the screen upon a rotating disk and making one larger than the other, the mechanism governing the movement of the film, causing it to give a longer dwell when the red screen is used than when the green-violet one is used.

1271667. C. J. Coleman K/34

An Apparatus for Taking and Projecting Motion Pictures in Color in which the color screen consists of a series of vertical lines in the desired colors placed well in front of the lens.

1273797 E. R. Bullock, Ass. to E. K. Co. J84-1963

A Sepia Toning Bath for silver prints comprising tellurium oxide dissolved in diluted hydrochloric acid to which has been added sodium chloride and potassium bromide.

1273308 J. Zsabka X417

An Adjustable Stand for X-Ray Machines.

1272547 J. J. Singer X441

A Device for Indirectly Illuminating Transparencies, particularly x-ray stereo pictures. An adjustable concaved reflector permits a differential lighting of the views.

1273190 J. D. Scott 045

A Stereopticon Slide comprising a half-tone picture printed on a thin sheet of transparent gelatin enclosed between two sheets of glass.

1270778 A. D. Brixey 0631-069

A Method of Showing Conversation in the Pictures of Motion Picture Films. The picture is taken as usual and a positive made therefrom. This positive is then projected upon a screen upon which the desired words are printed. The combined picture including the words as they appear upon the screen are then photographed and the resulting negative used for the final prints.

1273435 F. D. Williams 0631

A Method of Making Trick Motion Pictures, which consists in masking off parts of the picture during the first printing and later printing a secondary picture to the unmasked portions.

1278113 W. Low 0946

An Apparatus for Attaching in Registry at Definite Intervals on a Motion Picture Film, a series of micro sections which may be covered with mica plates. From the original film thus built up an exhibition film is made by projection, the individual pictures being moved nearer together by feeding the taking film a shorter distance than the original film. In this way a motion picture exhibit of a nerve tract, for example, may be prepared.

1271247 G. Wade, Ass.  $\frac{1}{2}$  to O. P. MacFarlane 1212

Motion Picture Film in which a long band is made of a series of folding portions hinged together by a flexible material.

1271673 S. Davis 1212

A Motion Picture Film in which the image is protected by a layer of celluloid and the two films are stitched together along the edges with the image between them.

1275063 P. Majorana 1612

A Pyroxylin Composition made up of clear collodion 80.5%; spirits of camphor 6.5%; gum camphor 10.5% and dye 2.5%. It is alleged to be useful as a film base.

1273172 P. J. Marks, Ass. to E. K. Co. 210

A Clip for Adapting Cable Releases to Small Folding Cameras of the type in which the lens and shutter are carried by a thin metal panel. The clip engages by means of spring fingers over one of the upper corners of the panel. The clip is also provided with a shoulder which engages one of the screws on the front of the panel.

1274561 R. Kroedel, Ass. to E. K. Co. 2103

A Camera Carriage, the clamp of which is brought into engagement with the track vertically by means of a laterally spring pressed cam. The tension of the spring which operates the cam is adjustable by means of a screw threaded abutment.

1272292 W. K. Menns 2131

A Camera of the Reflex Type with a Between-the-Lens Shutter. A safety shutter in the focusing hood, which is automatically closed when the exposure is made, prevents light from reaching the plates which are carried in the magazine.

1272227 W. J. Crothers 215

A Roll Film Camera in which sliding blinds are positioned in front of the exposure area so that the size of the picture may be varied.

1271022 O. Duperly 2152

A Double Exposure Prevention Device in which actuation of the shutter causes the shutter to be locked against further operation. There is a connection between the locking means and the key of the winding spool whereby the locking means is released when the key is turned.

1274223 O. Weis 2152

A Roll Film Camera provided with a quick wind driven from a spring motor. It is controlled by notches located at intervals at one edge of the film, which are engaged by one arm of a bell crank lever, the other of which co-operates with push button.

1270956 E. G. Kesling 2158

A Print-Tilting Attachment for Film Cameras. The film has a white backing paper, and passes before an opening in the back of the camera, through which the backing paper may be written upon. The light is prevented from reaching the film by a separate plate between the backing paper and the film. When the inscription is written on the backing paper this plate may be slid to one side and the inscription is light-printed on the film. A semi-translucent screen is used when the light-printing is done, so as to control its speed.

- 1270983 A. S. Spiegel 2153  
 A Negative Tilting Roll Film Camera, in which a piece of abrasive paper is placed beneath the path of the film. The backing paper is written upon through an opening in the camera, and the film is thus forced against the abrasive, which roughens the emulsion so that upon development the title is legible. In an alternate form carbon paper is used, and the title is light-printed on the exposure area by the exposure.
- 1261685 J. E. Ender, L. W. Crompton and W. C. Burgert 2153  
 A Camera having means for Light-Printing Inscriptions upon a Plate contained therein. An inscription is written upon a ground glass strip which is slid into an auxiliary chamber in the camera and pushed against the sensitive plate. Printing light is then admitted into the chamber through the ground glass on to the plate.
- 1272029 C. C. Finn 2153  
 A Tilting Device for Negatives in which a portion of the film is exposed through a lens separate from the camera lens. The inscription is written upon a translucent slate which is positioned at a point in front of the lens, and this inscription is light-printed upon the film. The position of this supplementary device as shown, is beneath the main lens upon the folding bed.
- 1272415 H. J. Gaisman, Ass. to E. K. Co. 2153  
 A Roll Film Camera Provided with means for Producing Designations upon the Film. The camera is provided with a flexible opaque panel in one wall. Immediately below the panel on the opposite side of the film, and engaging the sensitive surface is a special shelf, against which portions of the film are pressed when the operator writes an inscription upon the flexible panel. The shelf may either bear transfer material, such as carbon paper, which will cause the inscription to be transferred on to the sensitive surface of the film, or it may be roughened so as to make an abraded inscription on the sensitive surface.
- 1274302 H. F. Maynes 2153  
 An Attachment for Punching Numbers or Letters on the Margin of Roll Film while in the Camera. The characters so punched are composed of a series of small holes made by a battery of small punches selectively engaged by the actuating faces on the under side of a controlling disk.
- 1271156 M. and R. C. Givler 219  
 A Compact Camera for taking a Single Exposure or a Series of Consecutive Exposures, as for Motion Pictures. A reflecting mirror is between the lens and the film, giving a long focus for the size of the box used. There are novel arrangements for focusing and for actuating the shutter. The number of exposures is shown by an indicator.
- 1272190 G. C. Beidler 219  
 A Camera for Copying Both Sides of the Leaf of a Book Simultaneously. There is a frame having glass sides between which the leaf of the book is placed. The opposite surfaces are reflected up to the opposite sides of a sensitive paper, so that the resulting copy will be printed on both sides like the original.

1272635 C. De Marco 219

A Combination Illuminating Light and Camera in the form of a Pistol. The compact roll film is used, and exposures may be made by pulling the trigger. The device may also be used as an ordinary pocket flash lamp, and the light is operated by pulling a trigger. It is not intended that instantaneous flashlights be taken, but a time exposure may be made by pointing the device long enough at the subject.

1270803 W. F. Folmer, Ass. to E. K. Co. 219-083

A Wind Motor for use on Aeroplanes. The movement of the aeroplane causes the motor to operate a camera, and also to furnish suction means for holding the film flat.

1273183 J. W. Ramsay 219

A Camera provided with a Mirror pivotally supported externally at one side of the axis so as to reflect a supplement picture into the lens at the same time a main picture is being taken.

1270269 H. Davis, Ass. to E. K. Co. 2232

A Lamp House for Projecting Cameras in which the lamp is mounted on guide rods and inserted through a door at the rear, the door, lamp and guide rods being removable as a unit.

1275120 E. C. Ballman and E. P. Evers 2233

A Projection Apparatus using a Special Form of Ellipsoidal.

1274009 J. and P. Courtier 231

Apparatus for Producing Flashlights by Electric Volatilization of Fusible Wires. The apparatus provides for rapidly fusing in succession a predetermined number of small wires.

1273881 C. A. Lare 241

A Vertical Cabinet which may be used either for Enlarging or for Contact Printing. It may be adapted for use with incandescent lamps, arc lights or daylight. When enlarging, the negative is located in a carrier adjustable in several directions. Border prints are made by light reflected on to a white card surrounding the negative. A back ground or vignettes are supported to also appear in the finished enlargement. Adjustments and automatic control of the contact printing lamps are provided.

1271500 E. C. Cronk 252

A Work-Handling Device made from a single sheet of metal having fingers bent in opposite directions. It is intended for use with plates supported on edge in a developing tank.

1274651 S. Windrim and D. D. Young 2541

A Developing Apparatus for Roll Film. It comprises two cylindrical tanks of different diameter the smaller one nesting centrally in the larger one so as to leave

a narrow annular space between the tanks in which the developer is located. The film roll is located in a small pocket in the outer tank, and its lead strip is attached to a bar on the inner tank. The latter is then rotated so as to unroll the film and drag it through the annular developing space.

1272574 W. M. Thomas, Ass. to Thomas-Oberkirch Co., Ltd. 2614

A Support for Cameras, Machine Guns and the Like. There is a universal joint upon which the instrument may be properly set so that it will revolve in a horizontal plane while in use and as desired by the operator.

1270537 P. J. Marks, Ass. to E. K. Co. 2626

A Shutter Actuating Device in which the timing is done by a series of gears that are driven by a spring, first in one direction and then in the other, depending on which way the spring is tensioned.

1274262 O. H. Gruss, Ass. to Simplex Photo Products Co. 2623

A Between-The-Lens Shutter of the high speed type, in which the leaves are rapidly rotated in one direction by a rotary ring, driven through a gear from a helical spring. A dash-pot is used to control the slower speeds, and the movement of a single dial serves to either adjust the retarded speeds or throw the shutter on to the high speeds. The latter are determined by the tension of the helical spring, and as the screw threaded barrel of the latter is rotated it causes a nut bearing a pointer to slide over a high speed scale.

1273373 E. R. Iwagami 264

A Roll Film Camera having a special Finder. The finder lens axis is inclined downwardly relative to the axis of the main lens. The image from the inclined finder lens is received after reflection upon an adjustably inclined ground glass observed through a hood.

1272454 J. G. Jones, Ass. to E. K. Co. 2653

The Tongue on the End of the Backing Paper of a Roll Film Cartridge is cut to register with the slot in the spool, so that the backing paper will be automatically registered with the flanges when the tongue is thrust into position.

1274464 F. M. Steadman 2683

An Actinometer which determines the strength of light by the least visible tint observable on a printing out paper when the latter is given a series of geometrically increasing exposures through openings of different relative aperture. In order to estimate the strength of light reflected from inaccessible objects, a standard surface of adjustable amounts of white and black area is placed so as to reflect light on to the actinometer. Thus for marine and snow views, the maximum light will be reflected by a screen of wholly white surface, while for green trees the screen will be nearly black.

1270823 H. F. Hoefle and G. W. Adams, Ass. to E. K. Co. 281

A Trimming Board provided with a readily removable Trimming Gauge. The gauge is attached to the side of the board carrying the scale.

1271623 M. Segel, Ass. to Elizabeth Mehlfelder Ubelmesser 3101

An Automatically Compensating Feed for Motion Picture Machines. Loops are formed both before and after the exposure position. If the film becomes taut at the takeup end, the driving sprocket at that point stops, permitting the loop to form again, so that unnecessary tension upon the film is avoided.

1270866 N. Power, Ass. to Nicholas Power Co. 3102

The Spring Tensioning Device that presses the film strip in a motion picture projector as it passes the projecting opening is made readily removable for replacement.

1273068 A. P. Jurgenson 3103  
Ass. to Eureka Projector Device Co. Inc.

A Motion Picture Projector in which there is no shutter to cut off the light during the movement of the film between the projection of the pictures. Instead, the projecting lens is thrown out of focus during this period, causing diffused light to fall upon the screen. This causes even illumination of the film and reduces flicker, it is claimed.

1272789 E. M. Green 315

A Combined Motion Picture Camera and Projector in which the same driving means is used to operate either the projecting shutter before the lens or a taking shutter behind the lens. There is also a between-the-lens shutter for taking still pictures.

1273328 J. A. Cameron 3201  
Ass. to Cameron Picture Machine Co.

A Motion Picture Projector of the film beater type, provided with a special beater and special film tensioning shoes. The beater element is especially designed to intermittently advance the film with a minimum deviation of the latter from its normal path.

1274241 J. A. Cameron 3201

A Motion Picture Machine having an intermittent feed of the beater type, the beater member having an angular projection near the point of pivotal support.

1274242 J. A. Cameron 3201  
Ass. to Cameron Picture Machine Co.

A Tensioning Device for Motion Picture Projectors of the film beater type in which a plurality of longitudinally aligned clamping shoes are spring-pressed against each side of the film in the gate.

1272174 E. L. Aiken, Ass. to New Jersey Patent Co. 3204

A Container for Motion Picture Reels in which the film is led out through a narrow passage having spring-pressed walls, so that should the film catch fire in the projector it cannot ignite the film within the container.

1272671

J. C. Jonson 3204

An Indicator for Motion Picture Film Magazines. It comprises a bell crank lever, one arm of which carries a roll bearing against the film on the reel while the other arm carries a pointer moving over a scale which shows how much film is left in the magazine. The pointer carries a trip which engages the striker of a bell when the film runs out.

1273359

L. B. Griffin 3204

A Film Magazine for Motion Picture Projectors in which the film is fed from the inside outwardly instead of outside inwardly, thereby avoiding rewinding.

1272505

J. G. R. O'Hara  
Ass. to Educational Motion Picture & Film Co.

A Simplified Lamp House for Motion Picture Projectors using nitrogen tungsten lamps. Partially light-trapped openings provide for cooling ventilation.

1273843

Wm. V. Foley 3205

A Motion Picture Projecting Apparatus, comprising a special reflector which includes a small spherical mirror behind the concentrated filament lamp together with a larger outwardly flaring mirror having a plurality of sets of small plane facets which are angularly disposed one to another.

1271748

E. A. Nelson 3206

A Focusing Device for Motion Picture Machines in which an element of the lens is moved by a helical slot and screw in which the direction of turning the element is operated by an electric motor controlled at a distance.

1272623

D. F. Comstock 3205

Ass. to Technicolor Motion Picture Corporation

An Apparatus for Neutralizing Distortion in Motion Picture Projection, due to the picture being thrown upon the screen in an angle. A plano-convex cylindrical lens, the axis of which is tipped relatively to the transparency, is introduced so as to cause a keystone distortion in a direction opposite to that caused by the oblique position of the projector, thus counteracting the effect of the latter.

1263070

W. H. Kelly 3206

An attachment for Motion Picture Projecting Machines in which a prism may be placed in the usual path of the light rays when the pictures are not being shown to project by another path advertisement, etc.

1273211

J. B. Flogerzi 3207

An Electric Switch for Motion Picture Theaters, in which the electric power is received over an alternating circuit and transformed into direct current by means of a rotary convertor. The switch enables a single rotary convertor to do the work for two motion picture machines, and automatically uses the alternating current for warming up the carbons of the machine that is out of action but ready to project.

1274607 E. Schneider 321

A Foldable Motion Picture Apparatus in which both film magazines are placed coaxially beneath the projecting mechanism. The latter is mounted on a frame plate which is so pivoted that it can be located in a vertical position during projection but swung into a horizontal position adjacent the magazine for transportation. The resistance coil of the arc lamp is wound circumferentially around the casing of the condensers so that the latter will not cool off too rapidly and crack.

1273327 A. R. Bullock 322

A Motion Picture Projector in which the film runs at constant speed, its movement being compensated by a pair of oscillated prisms which co-act with alternate pictures, a rotary shutter cutting off light through one prism as soon as the other prism is in position to act.

127189 A. C. Rutzen 323

A Combined Motion Picture Projector and Phonograph. The instrument is provided at the top with a large, flaring chamber or horn, at the front of which is located a projecting screen of the transmission type. Sound is conducted from the phonograph to the horn through a tube while the light from the projector is reflected through a mirror system along the horn to the screen.

1274530 J. T. Fritzsch 325

An Advertising Projection Apparatus in which a series of pictures is carried into projecting position intermittently by means of an endless belt electrically driven. A shutter cuts off the light while changing pictures.

1273921 N. Power, Ass. to Nicholas Power Co. 361

A Supporting Frame for Motion Picture Projectors which is angularly adjustable with respect to the floor, yet maintains operative connection with the driving motor located on a stationary part of the apparatus. The connection includes a belt running over adjustable idlers.

1271056 R. P. Miller, Ass. to Union Iron Works 374

An Arrangement of Cords and Diffusing Curtains to be placed close beneath the skylights of a motion picture studio.

## British Patents

116549 A. R. Flint 066

Cinematographs. Relates to the obtaining of stereoscopic and distance effects from cinematograph views projected on a screen, and consists in surrounding the image by a proscenium of box or conical shape, which may be formed of overlapping devices as in stage scenery, if required, and is arranged in front of the screen, with a slight interval between the two.

116659

H. Shorrocks 068

**Cinematograph Apparatus.** In order to produce cinematograph photographs with stereoscopic effects, the camera is mounted on a table<sup>9</sup> which is rotated by a hand-wheel and is also traversed in a straight line along a base member.

116570

J. Burns 069

**Cinematograph Apparatus.** As a scene is being photographed, the words spoken by an actor are written, preferably in shorthand, on an electrically driven band H, controlled by a switch operated from the camera. The band H and a plain band M, are then mounted in a device by which they may be moved in unison, and the words are re-written in ordinary characters on the band M. Subsequently the band M is electrically driven in synchronism with the projector, and the words are read to form a spoken accompaniment to the picture. If the film in the projector breaks, the driving mechanism of the band M is put out of action by means of a switch or other member.

116727

W. H. Baker and W. Millward 089

**Distorted Photographs.** An invention for the improvement on present methods of producing distorted photographs. It consists in the use of a non-spherical lens, or lens formed of two or more portions, differing in optical value from one another, and so mounted that they may be rotated about an axis transverse to its general plane. Fitted to a cinematograph camera, the lens is rotated during exposure.

116268

B. Borzykowski 1515

**Viscose.** Threads and other articles are prepared from viscose solution in a fresh or only slightly matured and unpurified condition. As precipitating baths, dilute acids (containing for example less than 5 per cent of sulphuric acid) or strongly salt solutions of density greater than 18° B. may be used, and the threads are given an extended travel (at least 10 cms.) through the bath. Acids, up to 10 per cent of sulphuric acid or acid salts such as aluminium sulphate may be added to the salt solutions.

116366

C. F. Gross and Viscose Development Co. 1515

**Obtaining Amorphous Cellulose; Xanthates.** In the manufacture of covers or masses from amorphous cellulose regenerated from the xanthate, the covering or mass is subject to a progressively increasing continuous or intermittent rolling pressure during drying. The method may be applied to the covering of shafts, spindles, rollers, or wheels with a layer of cellulose. A tube or annulus of the hydrated regenerated cellulose is formed, cut into suitable rings, etc., washed, and placed on the roller, etc.; to be covered; the shrinkage which occurs on drying fixes the covering on, and gradually increasing roller pressure is then applied during the subsequent drying.

116548

G. Waterloo 2105

**Folding Photographic Cameras.** Relates to cameras having a narrow top, front, and bottom frame, with solid side members hinged to the front member of the frame, and consists chiefly in a back member in two parts hinged to the rear ends of the top and bottom parts of the frame, connected by a bellows with the front thereof, and adapted to co-operate with the opened sides.

117108

W. F. Johnson 252

**Racks for Developing Tanks.** An adjustable rack suitable for use with plates of any usual size comprises a plate rest to receive the edges of the plates and having a central aperture for the passage of the liquid. This rest has mounted on it uprights carrying an adjustable gripping piece which is locked on the plates by nuts.

116882

A. W. McCurdy 2653

**Photographic Films. Roll Spools; Film Packs.** A roll film cartridge is sealed by waterproof strips and the entire cartridge may be coated with cellulose acetate or nitrate or other waterproofing agent. The coating may be dispensed with if the empty spool and wrapper have first been rendered waterproof. Film packs are sealed by waterproof strips and then coated with waterproofing material.

116922

C. M. Hepworth 34

**Photographic Printing Apparatus.** Apparatus for printing cinematograph positive films from a negative having sections varying in density.

116921

W. C. Jeapes 34

**Photographic Printing Apparatus.** In an apparatus for varying the intensity of light in a printing machine for cinematograph films in accordance with the varying densities of sections of the film, and for otherwise controlling the machine, as the negative film passes through the machine, slots or cut-away portions on its edge actuate mechanism including electro-magnets to cause a paper templet to be fed forward by drums having pins to engage slots in the templet. Perforations in the templet allow spring contacts to engage a plate and throw resistance coils into the lighting circuit.

116709

A. E. Dufour 353

**Photographic Apparatus.** Continuous apparatus for developing and fixing. In apparatus for developing and fixing, the photographic strip with its sensitized surface upwards moves in a guide through a chamber, developer being supplied from a vessel through a pipe and funnel to a roller, under the control of valves. The vessel is fitted with an air pipe, and a tongue is provided for spreading the developer. A developed strip is passed through a fixing chamber.

# Monthly **ABSTRACT** Bulletin



November, 1918

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**EASTMAN KODAK COMPANY**  
Rochester, New York



# Monthly Abstract Bulletin

Vol. 4, No. 11

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## Photography

Some Essentials in the Fitting of the Dark-room G  
B. J., 1918, p. 390

General article on dark-rooms recommending a blind system for the window by which daylight can be obtained at will and a winding passage instead of a door.

Tropical Development of Eastman NC Film, etc. G5

A booklet issued gratis by the Company embodying information on the subject, published by the Research Laboratory.

Developing and Printing. VI. E. W. S. J  
Phot. Dealer, 1918, p. 238

This is the general conclusion of the series on amateur finishing, and contains a few notes on trade enlarging.

Developing and Printing. V. E. W. S. J3  
Phot. Dealer, 1918, p. 208

This section of the series of articles on amateur finishing describes the commercial printing on gaslight paper. A form for a work card is given and suggestions made for keeping cost on the work done.

Decennia Practica—Color Photography K/31  
B. J. Col. Sup., 1918, p. 35

This section gives a further installment of the patents for the preparation of screen plates.

The Featherstone Process of Two-Color Photography K31 K/24  
Mot. Pict. News, Oct., 1918, p. 2234

A description of the U. S. Patent, 1209420, for a two or three lens taking camera, the feature of which is that each color sensation image receives two exposures, first through the upper objective and then through the lower, both exposures of each image being made through a filter of the same color affixed to the shutter wheel. In this way it is possible to give the necessary exposure to scenes which are insufficiently illuminated.

On the Un-mounting and Re-mounting of Photographs N1  
B. J., 1918, p. 402

Dry-mounted photographs are easily removed from the mount by heat, but photographs mounted with wet adhesive are frequently very difficult to un-mount; the method suggested is to split the mount with a knife until only a very thin layer remains attached to the photograph and then to peel this off, thus leaving only a little of the surface of the mount on the photograph. This is considered to be better, as a rule, than an attempt to soak the photograph off.

# Working Against the Light 021

## Kodakery, Sept., 1918, p. 8

An illustrated article showing how to secure back and side lighting effects in outdoor work.

# Commercial Photography B. F. Welch 032

## B. J., 1918, p. 394

Hints on commercial work as a side line for portrait photographers.

# Reticulation or Frilling of Negatives 041

## Studio Light, Sept., 1918, p. 8

An article based on Communication No. 71 from the Research Laboratory.

# On Light Effects A. S. Cory 0832

## Mot. Pict. News, Sept., 1918, p. 1903

The author considers that the majority of unnatural effects on the motion picture screen, in particular a glaring white appearance of the highlights, are due to carelessness in development and not to improper exposure or incorrect lighting on the part of producer. The result is that when negatives exposed to accentuate certain features of a scene, while leaving others in comparative obscurity, come into the hands of the average dark-room worker, they are misjudged as under-exposures and are so unmercifully forced, or "cooked", to use the cameramen's term, the highlights are hopelessly over-developed, while details not meant to be obtrusive are brought into prominence, to the dismay of the cameraman and producer.

# Books on Projection A. S. Cory 067

## Mot. Pict. News, Sept., 1918, p. 1899

# X-Ray and Micro-Cinematography 0945 X06

## Mot. Pict. News, Sept., 1918, p. 2071

A reply to a query on the subject.

# Acid Fixing Bath without Acetic Acid 164

## B. J., 1918, p. 406

The following instructions are taken from "Portrait", the organ of the Ansco Company: The use of a shortstop between developing and fixing of the prints is absolutely necessary, and a bath should be prepared as follows:

### SHORTSTOP FORMULA

Water,	-	-	-	-	-	-	-	32	ozs.
Citric Acid,	-	-	-	-	-	-	-	$\frac{1}{2}$	oz.

Rinse the prints in this bath immediately after developing and before fixing.  
Fix the prints in a solution prepared as follows:

### FIXING BATH FORMULA

Water,	-	-	-	-	-	-	-	60	ozs.
Hypo,	-	-	-	-	-	-	-	1	lb.

when dissolved, add the following:

Water,	-	-	-	-	-	-	-	4	ozs.
Sodium bisulfite,	-	-	-	-	-	-	-	2	ozs.
Powdered alum,	-	-	-	-	-	-	-	1	oz.

- Modernizing the Enlarging Lantern A. Lockett 222  
B. J., 1918, p. 393

The author points out the convenience of a lantern with a reflector and diffusing screen and a condenser.

- The Characteristics and Efficiency of Projection Screens 324  
Mot. Pict. News, Oct., 1918, pp. 2230, 2422

An article based on information contained in Communication No. 26 from the Research Laboratory.

- The Sun-Light Arc; A Super Light-Source for 374  
Cinematography  
Mot. Pict. News, Sept., 1918, p. 2071

A feature of this lamp is the steadiness of the light produced by causing the upper or positive carbon to rotate slowly so that a symmetrical crater is maintained. The arc operates at 150 amperes, and is said to give 100,000 c. p. per lamp. The single light source method of photographing interiors has the advantage that the confusing multiplicity of shadows which is often apparent when a large number of separate light sources are used in lighting a scene, is eliminated.

- The Bell and Howell Splicing Machine 386  
Mot. Pict. News, Oct., 1918, p. 2430

This machine produces a bevel splice of standard width and minimum thickness and in the correct position relative to the frame line and the perforations.

The British Scientific Instrument Research Association has been formed to promote research and scientific work in the British Optical and Instrument trade.  
Phot. Dealer, 1918, p. 220

- Red Cross Institute has School of Motion Picture Operating for Cripples  
Mot. Pict. News, Sept., 1918, p. 2067

## Physics

- The Variation in the Blackening of a Photographic Plate with Time of Exposure, P. S. Helmick  
Total Energy Remaining Constant  
Phys. Rev., May, 1918, p. 372.

The blackening depends on the rate of flow of energy, the total energy (intensity multiplied by time) remaining constant. For each of the three kinds of plates used, with exposure to white and green light, there was a maximum of blackening, and the time of exposure required to produce this blackening varied as the speed of the plate. (By "blackening", the author means the density obtained in a hydrochinon developer in a constant time and at a constant temperature.)

The Visibility of Radiation E. P. Hyde, W. E. Forsythe and F. E. Cady

Astrophys. J., Sept., 1918, p. 65

A new determination of the visibility of radiation curve with a direct comparison photometer, making use of 29 subjects. Issue is taken with the advocates of flicker photometry. Systematic differences between the results of the two methods are noted; in particular, the flicker photometer gives relatively too much weight to red radiation.

The Absorption of Near Infra-Red Radiation W. W. Sleator  
by Water Vapor

Astrophys. J., Sept., 1918, p. 125

The wave lengths of the individual lines forming three of the absorption regions due to water vapor, lying in the neighborhood of wave length  $2.6\mu$  noted by Langley are accurately determined by the author. High dispersion is obtained by using a grating. A bolometer is used as a recording medium.

Simple Methods for Solving Floodlight Problems H. E. Butler

Gen. Elec. Rev., Sept., 1918, p. 633

Material given for solving practical problems in flood lighting.

Automobile Headlights and Glare-Reducing Devices L. C. Porter

Gen. Elec. Rev., Sept. 1918, p. 627

An article dealing in a simple manner with the fundamental principles of the subject.

On the Luminescence Due to Radio Activity E. Karrer and D. H. Kabakjian

J. Frank. Inst., 1918, p. 317

This is a detailed experimental study of the properties of certain self-luminous mixtures. When the luminosity of ordinary zinc sulfide paint has decreased by age it cannot readily be restored. A mixture of radium bromide and zinc sulfide however may be restored by heating. During the rise in temperature the brightness first increases, then falls nearly to zero, to rise again to a maximum on cooling to room temperature. The brightness now diminishes with age, and in a time relatively short compared to the half life of radium. This process may be repeated very many times with a slight steady decline in the maximum brightness.

The authors suggest and even recommend a self-luminous paint as a standard to replace the controlled lamp in a portable illuminometer, and submit designs for such an instrument.

On the Variation of the Photo-electrical Current Due to Heating and the Occlusion and Emission of Gases L. A. Welo

Phys. Rev., Oct., 1918, p. 251

A photo-electrical cell is so arranged that the metal surfaces may be heated by an electric current, and the gases emitted by the surfaces identified by the spectrometer. After each heating, the gases are examined and the photo-electric current measured. The emitted gases are hydrogen and hydrocarbons. It was possible in some cases to imitate, without heating the metals, the photoelectric behavior thus described, by putting the proper mixtures of hydrogen and oxygen into the tubes.

## Colloid Chemistry

### Adsorption Compounds

R. Haller

J. Chem. Soc., 1918, p. ii. 259

The formation of adsorption compounds by the interaction of dyes with other substances has been examined. Towards chemically indifferent solvents, adsorption compounds behave like mechanical mixtures. Adsorption compounds with a colorless adsorbent when dissolved in a suitable solvent show the same absorption spectrum as the corresponding solution of the dye. The melting points of adsorption compounds containing an adsorbent of low melting point are not very different from the melting point of the adsorbent. The general physical behavior of the so-called adsorption compounds leads, therefore, to the conclusion that these are to be regarded as mechanical mixtures.

## Organic Chemistry

### The Electrolytic Production of p-Aminophenol

T. Shōji

J. Chem. Soc., 1918, p. i. 342

The principal product of the electrolytic reduction of nitrobenzene in presence of strong sulfuric acid with platinum electrodes is p-aminophenol; the use of a carbon cathode is permissible. The concentration of the sulfuric acid electrolyte must not exceed 80%, otherwise there will be a loss of aminophenol by sulfonation. The quantity of sulfuric acid should be five times that of the nitrobenzene; the temperature must be kept at about 80°; a higher temperature induces sulfonation. The current density is 8—9 amperes per sq. dm., and the E. M. F. 6—8 volts. Vigorous agitation of the electrolyte is most important for obtaining a good current efficiency. The cathode chamber must be kept closed to prevent loss of nitrobenzene by volatilisation. Under these conditions, the author obtained 80 grams of crude p-aminophenol sulfate from 100 grams of commercial nitrobenzene, yielding 38 grams of free base, or 43% of the theoretical quantity.

## General and Inorganic Chemistry

### Chemical Iron Ware

Chem. Met. Eng., Sept., 1918, p. 520

Article deals with description of perfections and applications of "tantiron" although the composition of six others, mostly European silicon irons, is given. The majority consist principally of iron, (80%) and silicon (15%) with small amounts of Mn, Ni, Al, C and P.

Tantiron is made in different brands. For instance, one is very hard and not machinable; another quality resists hydrochloric acid which the others do not. Tantiron is practically not attacked by  $H_2SO_4$ ,  $HNO_3$ , or  $HC_2H_3O_2$ , concentrated or dilute, boiling or cold, and indeed not by most chemicals.

Terms "non-corrodible and acid-resisting iron" are misleading. Tantiron resists hot  $H_2SO_4$  better than cold acid, and many instances of attack are inexplicable.

The greatest corrosion occurs during the first 24 hours which is probably due to "skin" or outer surface having been changed by contact with sand when cast.

Designers of parts should bear in mind:

1. Avoid large, flat surfaces.
2. Have round corners.
3. Slots in preference to bolt holes.
4. Narrow facing strips.
5. Effects of expansion and contraction.
6. Ease of coreing and moulding.

Acid pans, basins, stills, bleachers, denitrating towers, autoclaves, condensers, pumps, electrodes for cyanide baths, etc., are some of the chief products of "Tantiron".

## From Eastman Kodak Research Laboratory

Rate of Pupillary Dilation and Contraction

P. Reeves

Psychological Rev., 25, 1918, p. 330

Communication No. 66

An Examination of the Literature showed very little available material on the operation of the normal pupil. In the first part of this experiment instantaneous flashlight photographs were taken of the pupils of two subjects for eight brightness levels, including total darkness at one end, and the just tolerable reflection of full sunlight from white paper at the other end. The effect of exposing one or both eyes to the sensitizing field was determined for both subjects throughout the brightness range.

From these curves six brightness levels were chosen and the pupils of six subjects were measured, one of the first subjects being used in this series to check the method. In this part of the experiment a motion picture camera was used, and a lamp bank displaced the flashpowder.

The rate of closing of the pupil was measured by taking motion pictures of an eye fully adapted to darkness, hence maximum diameter, as it closed to a diameter almost its minimum. The same six subjects served, as well as two others, and the average pupil closed in less than five seconds. The greater part of the contraction occurs within the first two seconds.

The rate of opening was determined for seven subjects, the above six and one other, as the pupil opened from near a minimum to a maximum diameter. The average pupil required from three to ten minutes to reach its maximum diameter.

The curves plotted of these results are similar in shape, though marked individual differences are shown as well as variations in the results from the same subject on different days.

The Reticulation of  
Gelatine

S. E. Sheppard and F. A. Elliott

Communication No. 71

J. Ind. Eng. Chem., Oct., 1918, p. 727

Studio Light, Sept., 1918, p. 8

The Production of Reticulation is ascribed to localized release of abnormal, i. e., lateral, swelling of the gelatine layer on plate or film. Normally the gelatine layer

swells and shrinks almost entirely in the direction perpendicular to the support. If it is treated with reagents (or under conditions of temperature) so that an excessive swelling is produced, it may strip off the plate. If the excessive pressure is restrained by tanning agents, it may easily happen that the restraint is not uniform; that is, we do not have at every point exactly compensating amounts of the swelling substances and the tanning reagent, but accumulation of one at one point, and accumulation of the other at an adjacent point. In consequence we get a localized excessive swelling and shrinkage adjacent to each other, the net result of which is the reticulation pattern. At the same time, if developed silver grains are present in the film, these aggregate in the more swollen portions, leaving the less swollen parts poorer in silver. It is pointed out that excessive "graininess" in developed images is very probably due to incipient or latent reticulation, because the products of development are tanning substances which will tend to be retained by the silver as reduced; photographs and curves illustrating these results are given.

Clarocit

Report No. 549

A Preparation to prevent haze on glass due to condensation, appears to consist essentially of coconut oil soap with coloring matter added.

Variation of Field with Variation of Object  
Distance in Kodak Anastigmats

019

Report No. 556

This Report gives the Results of Computations carried out to ascertain the variation with object distance of field curvature and astigmatic difference at  $18^\circ$  from the axis for a typical Kodak Anastigmat lens formula. The work indicates that decrease in object distance causes the image surface to become somewhat concave toward the lens, while the astigmatic difference increases slightly. If the best image surface at  $18^\circ$  is on the focal plane for infinity focus, it will be about 0.0006 times the focal length in front of the central image plane when the object distance is 16 times the focal length and about .0025 F when the object distance is 4 F. For object distance change from infinity to 4F the astigmatic difference increases from .009 F to .013 F. The results apply strictly only to the formula used but are probably approximately true for lenses of this type generally.

The subject has direct bearing on the question of the performance of Kodak Anastigmats in enlarging and copying.

Size Resistance with Particular Reference to the  
Gluing of Paper Boxes

Report No. 577

A Simple Test for Size Resistance based on the side diffusion of a tannin ferric chloride ink is described. It is shown that defective resistance to water of the ink resist coating on paper boxes is the cause of poor adhesion on gluing up. A series of different size resistance tests is given, and the superiority for quantitative results of electric methods pointed out.

# Patent Abstracts

## U. S. Patents

1271949 C. W. Saalburg, Richmond Hill, N. Y. K0713

A Method of Making Multicolor Photogravure Prints in which color filters are dispensed with, the color selection being made by artists' work similar to lithography, in fact, it is suggested that lithographic proofs in black may be used.

1272521 F. T. Powers, New York City K0733

A Method for Reproducing Color Work by first making line etching, taking proofs in blue, coloring these proofs with desired color, and then photographing through cross-line screen, and color filter if necessary. (Similar and simpler methods than those described have been in use for years.)

1276330 C. J. Coleman, New York City K1212

A Motion Picture Film intended particularly for Color Work, in which the alternate exposure areas are sensitized to different degrees so that the areas which are exposed to the red rays will be more sensitive than those exposed to green-violet light.

1275573 K212 K/3

H. E. Lichtenstein, Woodmere, N. Y., Ass.  $\frac{1}{2}$  to C. G. Hensley  
and S. K. Lichtenstein

A Camera intended particularly for Color Work. Instead of associating a pattern screen with each negative, it is fixed in the camera, and a special plate holder or cassette is used to introduce the negative directly in contact with the screen, where it is spring-pressed in place.

1 7041 K31 /43

P. D. Brewster, East Orange, N. J., Ass. to Brewster  
Film Corporation

A Motion Picture Camera for taking simultaneous pictures upon opposite sides of a film with two emulsions. It is intended particularly for use in color work. Attention is paid to the centering of the two images, one of which is made slightly larger than the other, so that the convergence of the rays of light passing through them will produce unblurred images.

1276743 2103

A. C. Fisher, Rochester, N. Y., Ass. to E. K. Co.

A Folding Camera with an Automatically Erecting Front. The novelty resides in the arrangement consisting of a rigid and compact construction which also permits the ready folding of the front.

1274179 H. F. Maynes, Gaines, Pa. 2105 2153

A Back for a Camera having means for Perforating Inscriptions upon a Film. The particular intention is that it may be used not only before the film is developed, but it may also be used apart from the camera for stenciling films. Registering scales upon the film and upon the back may be used for insuring proper location of the inscription areas.

1275965 E. C. Meyer, Thane, Alaska. 2152

A Double Exposure Prevention Device and Quick Wind. A spring motor drives the take-up spool for the roll film. This is actuated by a press button in the side of the camera which releases the spring. The length of the film taken up is governed by a measuring roll. When the exposure is made the spring-pressed button is forced outwardly, so that the user will observe that the picture has been taken, and will be reminded to press the button in again to cause the spring to advance the film once more.

1276542 E. G. Kesling, Bloomfield, Mo. 2153

A Camera having means for Light-Printing any desired legend upon a Negative in the Camera. It consists of a small fixed auxiliary lens inside of the camera and a flexible slate upon which inscriptions can be written. This is placed over an opening in the camera case and the small auxiliary lens then opened to permit the legend to be light-printed upon the negative. A special screen is provided for diminishing the actinic light admitted at the central portions of the legend to compensate for the poor covering quality of the lens used.

1275239 W. R. R. Frye, Washington, D. C. 241

A Photographic Printing Machine in which there are a number of printing lights separately controllable to permit "dodging" and all of them controlled by a separate switch or by an automatic switch operated by the closing of the printing frame.

1275410 C. A. Erickson, Burwell, Neb. 241-243

A Printing Machine in which adjustable masks of special form are used to permit any part of the negative to be printed and concealing the rest of the negative.

1276476 I. P. Barrows, Mount Hope, W. Va. 241

A Printing Machine intended primarily for use for printing from a continuous film upon a continuous strip of paper. With every actuation of a controlling lever the film and paper are moved forward and the last exposed paper area is cut off. The paper can be moved independently of the film, so that repeated prints of desired negative can be made.

1275784 L. L. Stevenson, Emporia, Kans. 242

A Kit for use in Printing Frames for adjusting the paper upon the negative. There are a number of spring fingers against which the paper may be registered. When the back is put in place these are pressed down nearly flat.

1275753 J. A. Robertson, Rochester, N. Y., 2541  
Ass. to E. K. Co.

A Film Developing Tank in which the spool of film is placed in one end of a long tank. The free end of the leader strip is attached to one end of the sliding cover and as the cover is slid upon the tank, the film is unrolled and is extended at length in the tank. Special provision is made to keep the cover and tank light tight.

1275556 L. B. Hall, Pittsburgh, Pa. 257

A Print Washing Attachment. A cone-shaped hollow nozzle adapted to be attached at its smaller end to a hose and having a closed base at the larger end with a row of openings at the side. This is intended to be placed in a flat dish and permits good circulation of water for washing prints.

- 1276289 P. D. Ulrich, Hershey, Pa., 257  
Ass.  $\frac{1}{2}$  to A. T. Heilman

A Photograph Print Washer consisting of a wire framework revolved by a water wheel. The frame at each end has adjustable supports upon which the drum may be placed to drain or to be filled.

- 1277756 A. H. Roikjer, Boise, Idaho 262

A Double Exposure Prevention Device in which a common key is used for operating the shutter and for winding the film spool. After the shutter has once been operated it cannot be again operated until the key has been withdrawn. While the shutter may again be operated by withdrawing the key and reinserting it, the probabilities are that the operator would rewind the film. There is an indicator to indicate the number of exposures made.

- 1276663 R. Kelin and T. M. Bruce, Rochester, N. Y., 2623  
Ass. to Ilex Optical Co.

A Photographic Shutter of the Between-the-Lens Type. It can be adjusted for instantaneous exposures of any speed within its limits. There is an escapement retarding device and a fly wheel retarding device which may be used separately or together.

- 1275230 J. H. Dolby, Elgin, Ill. 2626

A Simple Self Timing Mechanism. A frame is placed over the camera lens, this frame carrying a slidable plate with an aperture in it. A fuse holds the slide in its lifted position and when the fuse is burned, the slide moves by gravity across the open lens. The speed of the movement may be varied by changing the angle of the frame.

- 1275555 H. M. Hall, Los Angeles, Cal. 2626

A Spring-Operated Shutter Trip for Cameras which is controlled from a distance by a string that pulls the trigger, releasing the spring and operating the trip. The camera is intended either for use for taking wild animal pictures or to permit the operator to take his own picture.

- 1275995 V. Wood, Fort Worth, Texas, Ass.  $\frac{1}{2}$  to D. C. Feegles 3204

A Motion Picture Reel provided with a signal indicating when the reel has been exhausted. A spring-pressed arm bears against the surface of the film and when the roll is reduced beyond a certain point, the arm swings over and strikes a bell.

- 1276054 C. G. Grabe, Wilksburg, Pa., 3204  
Ass.  $\frac{3}{9}$  to L. A. Parish,  $\frac{2}{9}$  to K. P. Fuhrmann

A Motion Picture Machine having reels so constructed that the film may be wound from the center, so as to avoid rewinding. The invention is in the particular form of reel, which comprises an expanding core which fits the changing inner surface of the roll of film and special mechanism is required for leading out the film.

- 1276259 T. L. Parker, Chicago, Ill. 2682

An Actinometer in which the user looks at an opaque diagram in a tube by reflected light. The amount of light admitted is varied until the details are no longer distinguishable, thus giving a reading which is applied for photographic purposes.

- 1275956 F. McMillan, Glenellyn, Ill., 315  
Ass. 9/10 to H. L. Replogle

A Compact Motion Picture Machine intended particularly for home use. The reels are held in place by inwardly acting springs upon the doors through which they are inserted into the casing.

- 1275636 W. Wenderhold, New York City, 3204  
Ass. to Cru Patents Corporation

A Take-Up Reel for Motion Picture Film driven by a friction clutch. The edge of a friction driving wheel bears against the plane surface of the disc and it is moved automatically from the center as the reel is filled, so that the rate of taking up the film will be constant.

- 1275836 J. Brandstetter, Rochester, Minn., Ass. to 2626  
Conley Camera Co.

Operating Means for a Studio Shutter. A piston is operated by a rubber bulb and throws the shutter open. It is then held open because a spring crank is forced past a center position. The shutter is closed again by exhausting air from the piston member to throw the spring crank mentioned.

- 1275858 F. J. Cross, Charlton, England, Ass. to E. K. Co. 2645

An Attachment for Folding Cameras adapted for either films or plates and having a range finder that focuses the camera automatically. The attachment adjusts the range finder mechanism so that it will be correct for the focal plane for either film or plates, whichever is used.

- 1275989 F. W. Lovejoy, Rochester, N. Y., 2653-1211  
Ass. to E. K. Co.

A Sensitive Photographic Film with the usual backing with identifying symbols, the film having adjacent each picture area a latent developable symbol corresponding to the symbol on the backing strip.

- 1276779 F. W. Lovejoy, Rochester, N. Y., Ass. to E. K. Co. 2653

A Roll of Film in which the backing paper is provided at each exposure area with two lines of repeated numerals intersecting at right angles, the object being that with a relatively small window there will be less chance of the indicating mark being missed.

- 1275863 E. W. Davis, Chicago, Ill., 2662  
Ass. to Universal Camera Co.

An Absorbing Screen for Motion Picture Cameras comprising an annular member having at one point in its periphery a notch, through which the pictures are normally taken. The translucency of the annular member varies from opacity to transparency to permit the scene to fade away or to become gradually visible.

- 1275227 C. J. Coleman, New Rochelle, N. Y. 323

A Combined Motion Picture and Phonograph Apparatus. The two devices are driven by separate electrical motors, but a commutator upon the driving shaft of the phonograph governs the escapement that controls the speed of operation of the projector.

1276838

A. Wayditch, New York City 326-068

A rather unusual form of Projecting Arrangement for Motion Pictures intended to give stereoscopic effects. The pictures are arranged in a single row of film, the right and left eye pictures being alternate. The lens is divided into four segments and there is a revolving shutter so that a picture intended for one eye is projected through one segment, while the picture for the other eye is concealed. On account of the four lenses there will be shown a picture for each eye, the pictures being beside each other on the screen. They are intended to be viewed through the well known optical prisms such as are used in ordinary stereoscopes.

1275249

R. F. Hlavaty, Chicago, Ill., Ass.  $\frac{1}{2}$  to J. Kanta 364

A Finder and Focusing Means for Motion Picture Cameras. A revolving frame having a mirror passes between the lens and the sensitive film, so that between exposures the mirror occupies a position at an angle of 45 degrees to the axis of the lens and throws an image on a ground glass which is observed by a special collapsible finder, so that the user has a continuous view of the ground glass and can keep the camera in focus as the motion picture is being made.

1276733

E. W. Davis, Chicago, Ill. 364

A Focusing Device intended particularly for Motion Picture Cameras. Just back of the lens a special opening is made in the camera case and through this is thrust a combined reflecting prism and lens through which the film may be viewed and serve as a focusing screen. The small portion of the film thus exposed is, of course, discarded. After focusing the camera the attachment is withdrawn and the opening closed.

1275496

R. F. Taylor and W. W. Wheatly, Los Angeles, Cal., 372  
Ass. to W. Horsley

An Apparatus for Producing Motion Picture Puppet Plays. It comprises a co-ordinated platform or base which has a series of apertures in which the projections from the various puppets may be placed and by taking pictures of them stationed at the different points a complete film is made. The puppets will be changed by hand between each exposure. If desired, a large number of electromagnets may be placed beneath the platform and the puppets carry magnetic plates which are attracted, so that by energizing successive magnets the motion of the puppets between exposures may be obtained quite rapidly. It is intended particularly for motion pictures of the cartoon type.

1276198

H. C. Fentress, Alton, Ill. 372

An Apparatus for producing appropriate sounds at the screen of a motion picture theater. On a platform from which the screen is visible the persons producing the sound are disposed and a large number of speaking tubes extended from this platform to different portions of the screen, so that sounds may be made into the tubes by a person who can see the picture in such a way that the sound will appear to proceed from the proper point.

1273928

M. S. Rosenfeld, New York City 383

A Method of Cleaning Used and Soiled Motion Picture Film. The film is first passed between rolls with waxed surfaces, the wax scaling off and adhering in minute

scales to both sides of the film. It is then passed through a bath of tetrachloride of carbon, which dissolves the wax and spreads it evenly over the film. It is then passed between buffer wheels having strips of chamois which pass over a polishing material such as chalk or magnesia and polishes the film.

1275431 A. S. Howell, Chicago, Ill., Ass. to Bell & Howell Co. 386

A Splicing Apparatus for Motion Picture Films in which the two ends of the film are sheared off in such a way that the picture areas will exactly register. The cutting is done at an angle, so that the tapered ends overlap and they can be caused to adhere and still have smooth surfaces.

### British Patents

117048 A. de Brayer Gl 16

Material for Addition to Photographic Chemicals so that their elimination in washing can be recognized visually. The photographic reagent to be used, hypo for example, is incorporated with coloring material in a finely divided condition in a syrupy liquid, the paste thus formed being packed in a collapsible tube or other packing. The coloring matter acts as an indicator, showing when the last traces of the reagent have been completely washed out from the photographic image in the preparation of which it has been used.

117342 C. W. Kanolt 034 2109

Photographs Producing Changeable Effects. In a Process and Apparatus for use in producing changeable picture effects, a continuous or intermittent relative motion is produced between a lens, a line screen, and a sensitized surface during exposure. Relative motion between the camera and the object being photographed may also be produced in order to obtain a relief effect. The screen may be a line screen, may be composed of parallel cylindrical lenses, the less efficient parts of which are covered by the opaque portions of the line screen, and the same screen may be used for viewing the picture.

117839 J. F. Leventhal and M. Fleischer 062

Cartoon Cinematograph Films. A film is taken, and the pictures on the film projected, one by one, to proper succession, by a suitable apparatus. A frame or easel carries a glass plate upon which is placed a sheet of suitable tracing paper, on which the artist traces the lines of each picture, altering other features as his fancy may dictate, and thus producing pictures which in pose and certain general features correspond to the film pictures, but differ in other particulars so as to produce the cartoon effect. Each picture remains projected on the sheet until the artist has completed this tracing, then the sheet with the tracing is removed, another (blank) sheet is substituted, the film is fed to project on the blank sheet the next picture to be traced, and the tracing or drawing operation is repeated for this operation. In some cases a continuous web might be used, passing from one roller to another.

117282 I. S. Bunnell 089

Photographic Letter-press Printing Apparatus. Relates to methods of producing letter-press reading matter photographically, to be used subsequently for reproduction by any well-known process, and consists in first tracing from a negative alphabet, etc., a rough outline copy of the words, symbols, etc., desired, and then printing from the negative the selected fancy characters accordingly.

117399

M. Niell 2103

**Cameras.** The lens plate of a camera is provided with offset portions, with pins disposed between them and working in struts pivoted to the camera casing by pins.

117622

P. Boucard 222

**Photography.** An apparatus for enlarging photographs comprises a case on which is mounted a light-proof cone having at one end an objective lens and at the other means for supporting a sheet of sensitized paper, card or the like. The base also supports at a fixed distance from the cone a condenser consisting of two plano-convex lenses, the lens nearer the objective having the negative clamped to its plane surface by means of clips, while the other lens has clamped to its plane surface a sheet of ground glass, in order to diffuse the light from the lamp. The lens is mounted in a tube which screws tightly into a bush carried by the cone. A modification is described in which the optical axis is vertical.

117425

N. L. Scott 258

**Drying Photographic Films.** An apron, which is arranged to separate successive convolutions of a photographic film when the film is wound upon a reel for drying, comprises cross-bars secured at their ends in sockets formed at the ends of flexible sheet-metal links connected together by wire loops engaging notches. The ends of each loop pass through a washer engaging slots in the adjacent links. The sockets which serve to space apart successive layers of the apron on the drying reel, are strengthened by wooden blocks. The total length of each sheet metal link is twice the pitch of the cross-bars, and the abutting ends of the links are rounded so that they roll freely on one another. The flexible central portion of each sheet-metal link is formed in two thicknesses of metal.

117520

A. J. Blackburn 275

**Retouching Pencils.** The point of a retouching pencil is caused to rotate in a small circle in a spring-pressed holder. The lead-holder is carried by a spindle which is provided with eccentric bosses mounted on bearings in a casing. The spindle may move axially under the control of a spring and is rotated by a flexible shaft rotated through mechanism by a pedal or other means.

Monthly  
**ABSTRACT**  
Bulletin



December, 1918.

Issued by the Research Laboratory  
**EASTMAN KODAK COMPANY**  
Rochester, New York



# Monthly Abstract Bulletin

Vol. 4, No. 12

December, 1918



*T. F. K. ...  
Belmont*

## Photography

### Outdoor Lighting

D. Charles F5

B. J., 1918, p. 447

A method of ascertaining at what time the sun will be in a suitable position for photographing outdoor subjects is given together with description of instruments for the purpose. There is correspondence on the subject on page 487.

### A New Method of Intensifying Carbon Lantern Slides and Transparencies

T. H. Greenall H2 /82.

Amat. Phot., Oct., 1918, p. 383

Gelatine relief carbon images may be intensified by precipitating colored metallic compounds, such as iron or lead sulphide, uranium ferrocyanide, etc., within the gelatine by double de-composition. The relief image is first soaked in, say, a solution of uranium nitrate, rinsed and then immersed in a solution of potassium ferrocyanide and washed, the uranium ferrocyanide being deposited in a more or less colloidal condition according to the concentrations of the solutions employed. By using a mixture of, say, ferric chloride and uranium nitrate followed by potassium ferrocyanide, intermediate colors are obtainable. (This process is covered by U. S. patent 1,279,276, assigned to E. K. Co.)

### Stripping Negatives for Storage as Gelatine Films

H4

B. J., 1918, p. 446

The process recommended is a modification of the Fishenden process, the negative being hardened in formalin containing hydrofluoric acid. Detailed instructions for the process are given.

### Decennia Practica

K/3 K/56

B. J. Col. Sup., 1918, p. 39

Color Photography: Screen Plates—Miscellaneous: Two-Color and Four-Color processes.

### “War-type”

A. B. Warburg K/89

B. J. Col. Sup., 1918, p. 37

Under this name Miss Warburg describes a method of printing by bromoil transfer, inking up with a roller instead of a brush. In order to avoid trouble with the paper support, Kodak Transferotype paper is used and the image is transferred from the bromide paper to glass.

Photographers Must Save Silver Waste P1  
 Studio Light, Oct., 1918, p. 3

Instructions for precipitating silver from old fixing baths by means of sodium sulfide, together with a list of silver refiners.

The Fundamentals of Photography. C. E. K. Mees 015  
 (Chapter 7.)  
 Kodakery, Oct., 1918, p. 18

The terms "density" and "contrast" are explained, and the effect of time of development on the growth of contrast is shown by means of diagrams.

019

F. Twyman, managing director of Adam Hilger, Ltd., delivered the twenty-first Trail-Taylor memorial lecture on October 15th, taking for his subject interferometers for testing lenses. Mr. Twyman has recently developed the use of interferometers for the testing of lenses and prisms, and described his work on this subject. The interferometer used is derived from the Michelson instrument with the main difference that the two interfering beams of light come to a focus at the observer's eye. He considered that by the use of the interferometer opticians might attain the production of non-spherical surfaces with precision.  
 B. J., 1918, p. 472

Portraiture by Flashlight P. J. Halldorson 0314  
 Abel's Phot. Weekly, Oct., 1918, pp. 319, 340, 367

Production of Stains in Development 041  
 B. J., 1918, p. 433

An editorial note gives an account of the production of stains on a developing paper which was traced to the development of another kind of paper in the same solution, the paper first developed apparently giving up to the solution chemicals which produced stains on the second paper.

Pitfalls in Copying 057  
 B. J., 1918, p. 478

An editorial article containing practical notes on the difficulties which arise when copying from originals, such as those from surface color and reflections, the exposure which should be given, and precaution for avoiding granularity of the image.

High Speed Cinematography A. S. Cory 0631  
 Mot. Pict. News, Oct., 1918, p. 2582

Tinting and Toning of Eastman Positive Motion Picture 0645  
 Film. (Second edition revised)

The text of the first edition has been thoroughly revised and new methods worked out in the Research Laboratory during the past two years have been incorpo-

rated. The dyes recommended are of exclusively American manufacture, replacing the foreign made dyes previously recommended. A number of the toning formulæ have been improved while others have been eliminated and new ones substituted, including a method of obtaining dye-tones. Thirty-six specimens of toned and tinted film are included in the booklet.

Photoplast, A Method of Projecting Pictures in Relief A. S. Cory 067

Mot. Pict. News, Oct., 1918, p. 2578

A review of U. S. patent 1,124,665. In front of the projection screen a transparent plate glass about the same size as the screen is placed at an angle of 45° with the screen, while above this a painted scene or picture which is to form the background is placed horizontally so as to face the reflector, and this is brightly illuminated by lamps placed on each side of the stop, so arranged as to throw little or no light on the projection screen. When the photoplast film showing characters in action against a black background is projected through the glass reflector onto the screen, a spectator in front sees the painted scene, and apparently well in front of this the moving characters projected onto the screen. The success of the scheme depends on the right quality of the film projected, the use of a sufficiently intense projecting light, and a suitably darkened screen, otherwise the characters appear ghostly and the background is visible right through them.

Suggestions for the Conservation of Film and Moving Picture Machines E. K. Gillett 067

Mot. Pict. News, Oct., 1918, p. 2783

An instructive article for the motion picture operator.

X-Rays 099

A handbook issued by the Company for distribution among roentgenologist. The various chapters deal with the x-ray photographic physics, the use of dental x-ray films, development, developing formulæ, after treatment, etc. The technical sections have been compiled largely from the results of investigations conducted in the X-ray department of the Research Laboratory.

Chapters on Intermittents. Part. III. 3201

Mot. Pict. News, Oct., 1918, p. 2690

A description of the star wheel with oblique slots, or the so-called eccentric star, used in motion picture mechanism.

Optical Instruction and Research

B. J., 1918, p. 458

This is the first report of the Technical Optics Committee of the London County Council. It describes the work done by the Committee in the organization of optical instruction. The researches are on the design of night glasses of magnification suitable for a given aperture, the application of the Hartmann test to large achromatic lenses, and cementing processes for glass.

## Physics

### Measurements of Transmission Factor

M. Luckiesh and L. L. Mellor

J. Frank. Inst., Nov., 1918, p. 529

The problem of which the solution is given in this article was to measure the transmission of light by any body, in particular by plates of glass with rough or uneven surfaces. Such glasses are used in lamp shades. The authors measure the brightness of the target in an intergrading sphere, through the object to be studied. They employ two different devices for illuminating the plate. In the first a parallel beam of light falls upon it and is diffused about the sphere by a hollow cone of ground glass just inside the glass. In the second a hemisphere of ground opal glass covers the plate and its outer surface and is strongly illuminated by several lamps distributed in a white lined box. The light is diffused inside the sphere as before. These two methods give respectively direct and diffuse transmission. For the various objects studied, all samples of surfaced glass, the ratios of diffuse to direct transmission were between 1.2 and 0.79. The observations were made with a Sharp-Millar Photometer.

### A Physical Study of the Welsbach Mantle

H. E. Ives, E. F. Kingsbury and E. Kar

J. Frank. Inst., Oct., 1918, p. 401, and Nov., 1918, p. 585

The account given in these papers covers an extended and detailed study of the luminous and thermodynamic properties of various types and mantles. By measurements of temperature and corresponding radiant emission it was possible to obtain emissive powers at different wave-lengths between  $0.4\mu$  and  $14\mu$ . The investigation involved the use of a variety of apparatus and experimental methods, as well as an extensive employment of radiation formulæ. It results in more accurate knowledge of the relation between behavior and structure of mantle, particularly of the thoriated mantle in common use, and of the part played in the light-giving by its different material constituents.

### The Absorption of the Atmosphere

A. Boutaric

Ann. Phys., July-Aug., 1918, p. 5

This paper reports the conclusions derived by the author from his work in this field and gives a very simple scheme of the influence that atmosphere exerts on the thermic state of the globe.

### Types of Phosphorescence

E. L. Nichols and H. L. Howes

Proc. Nat. Acad. Sci., 1918, p. 305

Curves of decay or diminution of brightness have heretofore been supposed to be of the same character. In recent investigations the authors have found the exceedingly brief phosphorescence of the uranyl salts, which although very brilliant lasts only for about 0.03 second, to be of an entirely different type. They propose, therefore, to recognize two types of phosphorescence and designate them as persistent phosphorescence and vanishing phosphorescence.

### Atomic Structure from the Physico-Chemical Standpoint

A. W. Stewart

Phil. Mag., Oct., 1918, p. 326

An atomic model is suggested in which the nucleus is composed of the concentric positive and negative rings and an outer system of electrons in cometary orbits. It is

an endeavor to describe the mechanics of emission of alpha and beta particles and formation of the consequent isotopes. The theory does not present any solutions of the chemical or electromagnetic difficulties which look rather formidable.

Atomic Number and Frequency Differences  
in Spectral Series

H. Bell

Phil. Mag., Oct., 1918, p. 337

The author has discovered a linear relation between the square root of frequency differences between members of doublet and triplet series and the atomic number. The slope of the line is characteristic of the periodic table. No physical explanation is offered but the relation is suggestive in the light of Sommerfeld's article.

On Bohr's Hypothesis of Stationary States  
of Motion and the Radiation from an Accelerated Electron

G. A. Schott

Phil. Mag., Sept., 1918, p. 243

A generalized treatment of the radiation from an electron in orbital motion on the basis of the Maxwell equations and Poynting theorem. Bohr's stationary states are shown to be inconsistent with those postulates if radiation is excluded. The writer suggests a re-statement of Bohr's requirements which demands a constant electro-magnetic energy for the electron, but permits a radiation replenished from external or internal non-electro-magnetic sources.

A Comparative Study of the Flame and  
Furnace Spectra of Iron

G. A. Hemsalech

Phil. Mag., Sept., 1918, p. 209

On the Origin of the Line Spectra Emitted by  
Iron Vapor in an Electric Tube Resistance  
Furnace at Temperatures above 2500°C.

G. A. Hemsalech

Phil. Mag., Oct., 1918, p. 281

The papers are occasioned by the criticism of King's endeavor to judge the temperature of flames by character of spectrum as defined for furnace spectra. The writer classifies the modes of excitation as thermal, thermo-chemical and thermo-electrical. Flame, spark, arc and furnace present these in varying degrees at the same temperature and should not be compared by this criterion.

On the Electrical Resolution and Broadening  
of Helium Lines

T. R. Merton

Proc. Roy. Soc., Sept., 1918, p. 30

The broadening of helium lines by condenser spark discharges is in close agreement with the electrical resolution of the lines.

The "isolated components" in the electrical resolution recorded by others have been found in the broadened lines.

It is suggested that the "isolated components" are not a direct product of the electrical resolution, but an extension of the helium spectrum. Two of these lines may perhaps be represented as lines of combination series.

On the Spectrum of Cadmium  
in the Inactive Gases

J. N. Collie and H. E. Watson

Proc. Roy. Soc., Oct., 1918, p. 115

An account of some researches on the phenomena around a cadmium cathode in helium, neon, argon and xenon. The cadmium lines were visible even with the feeblest currents when the tube and the cathode were quite cold. Only certain lines were seen depending on the nature and pressure of the gas in the tube. As the lines appear at pressures in some cases as great as 60 mm. the behavior of the monatomic gases is sharply differentiated from that of the diatomic.

The Lighting of the Home

Trans. I. E. S., Oct., 1918, p. 382

A popular lecture circulated, with lantern slide items, by the I. E. S., giving a general discussion of the fundamental principles of light and vision, an explanation of glare, and suggestions as to the selection and disposition of lighting fixtures. It considers the problem for typical rooms of different uses, and illustrates satisfactory solutions.

The Relation of Light to Health

E. de M. Sajous

Trans. I. E. S., Oct., 1918, p. 370

Light "tends" to sustain health by promoting the activity of the oxidizing ferment adrenoxidase which sustains the oxidation of tissue cells, an essential function of their life. It tends to defend the cell, when endangered by certain germs and poisons, by enhancing the efficiency of the defensive ferments which submit these harmful agencies to digestive destruction.

Nonsilverable Containers for Silvering Mirrors

W. W. Coblenz

Science, Oct., 1918, p. 345

Note on the use of ordinary "granite ware" containers, rather than glass, during the process of silvering. The "granite ware", as it does not attract the silver, increases the available supply of silver for deposition on the mirror.

Hygrometry in the Terms of the Weight of a Film of Gelatine

C. Barus

Science, Oct., 1918, p. 374

Description of a torsion balance in which the weight of the moisture absorbed by a small piece of gelatine film causes the pointer to travel along a graduated scale. Great accuracy is claimed for the instrument.

An Electro-Thermo-Regulator of Water Baths

C. H. Otis

Science, Oct., 1918, p. 425

A thermostat is described in which the unequal expansion of two metals immersed in the bath caused the contact to be made or broken. The expansion of the couple is greatly magnified by a system of levers.

Illuminating Engineering as a Commercial Force

O. R. Hogue, C. L. Law and E. E. Whitehorne

Trans. I. E. S., Oct., 1918, p. 357

This paper presents the advantages to lighting companies resulting from the employment of experts in illumination and is in fact an advertisement of the profession of the Illuminating Engineer.

The Necessity for Better Book and Newspaper  
Manufacture with respect to Materials used  
Science, Oct., 1918, p. 369

R. W. Schufeldt

An article urging the use of better materials in book and newspaper manufacture, especially of scientific publications, thus ensuring the durability of current literature.

Germicidal Action  
of Ultra-Violet Radiation

C. H. Browning and S. Russ

Archives Rad. and Elect., Aug., 1918, p. 85

Plate was painted with living bacterial emulsion and exposed to ultra-violet light in a spectrograph. After incubation the germicidal effect is seen to end abruptly at 294  $\mu$ . Result verified by detection of selective absorption of bacterial emulsion in same region.

## General and Inorganic Chemistry

Aluminium and its Light Alloys, V.

P. D. Merica

Chem. Met. Eng., Oct. 15, 1918, p. 635

A series of articles:

No. 3 The constitution and properties of alloys with copper, iron, manganese, nickel, silicon and zinc.

No. 4 Deals with binary and ternary alloys. Composition and properties given.

No. 5 Deals with duralumin. This is the most important light alloy of aluminium. Composition and properties are given.

The Electro-Chemical Industries at Shawinigan Falls

H. C. Randall

Chem. Met. Eng., Oct. 1, 1918, p. 561

Description of the development of over 30,000 h. p. and of the varied industries attracted by this resource.

Washing in Filter Presses

D. R. Sperry

Chem. Met. Eng., Nov. 1, 1918, p. 680

Treats of thorough washing in the plate type of press. Illustrations are given.

## Analytical Chemistry

Detection of Potassium by the Use of Light Filters

A. Herzog

J. Chem. Soc., 1918, p. ii. 205

The light filter recommended is prepared by coating a glass plate with a gelatine solution containing a mixture of patent blue and tartrazine in such proportion that each square meter of glass shall have on it 3.9 grams of the former and 2.5 grams of the latter dye. Viewed through this screen, the potassium flame appears bright red surrounded by a yellowish fringe. Rubidium is the only other element which gives a coloration similar to that shown by potassium. Green and violet dyes may be used for the purpose, but preference is given to the mixture mentioned.

## Increasing the Delicacy of Delivery of Burets

E. H. Merritt

Analyst, 1918, p. 138

This is attained by waxing both the outside and the inside of the buret jet, thus securing the delivery of a smaller drop, which at the same time does not creep up the exterior wall of the jet.

Gravimetric Analysis of Chlorides,  
Bromides and Iodides

L. W. Winkler

Chem. Abst., 1918, p. 2177

Precipitate the halides by a slight excess of normal silver nitrate in 100 cc. of the cold solution to which has been added 5 cc. of normal nitric acid, or in presence of ferric salts, 10-20 cc. In the case of chlorides and bromides, let the mixture stand for one hour and then boil; in the case of iodides, add the silver nitrate first, the nitric acid after half an hour, and boil the mixture after another half hour. After twenty-four hours collect the precipitate on a plug of cotton in a Kjelch funnel and dry at 132°. Then wash it with 50 cc. of water acidified with nitric acid, and later with 50 cc. acidified with acetic acid. Correction values amounting to a few tenths of a milligram, according to the weight of the precipitate, are used to improve the accuracy of the results. Iodides may be precipitated in the presence of hydrochloric acid as palladium iodide. Dissolve 0.5 gram of palladium in nitric acid and evaporate the solution to dryness several times with hydrochloric acid; take up the residue with 10 cc. of 10% hydrochloric acid, add 1 cc. of alcohol to remove any free chlorine, and make the solution up to 100 cc. In the absence of chlorides, the palladium iodide remains in colloidal solution; when precipitated cold, it is flocculent, and becomes granular on heating. With a preponderating quantity of iodide, dilute the neutral solution so that 100 cc. will give about 0.1 gram of precipitate; add 1 gram of sodium chloride, and 10 cc. of palladium chloride solution, with agitation. Heat the liquid until the precipitate becomes granular, and collect the latter on the cotton filter after twenty-four hours, wash with 100 cc. of cold water, and dry at 132°. With small quantities of iodide, acidify 100 cc. of the liquid with hydrochloric acid and precipitate with 1 cc. of the palladium solution in the cold. Allow the precipitate to remain for twenty-four or forty-eight hours, according to its quantity, and collect it in the flocculent condition. The palladium iodide is somewhat soluble in presence of alkali bromides; in presence of large quantities of chlorides, a small correction is applied.

## Photochemistry

## A Method of Standardizing the Fastness of Colors to Light

A. Robson

J. Soc. Dyers Colorists, 1918, p. 185

Slips of filter paper dyed with various basic and salt colors were exposed to light, and Eosin G. G. F. of medium tint was found to bleach white behind glass in one week of average early spring weather. This color was taken as a standard. Cotton yarn dyed with the colors to be tested was exposed alongside of a strip of filter paper colored with the Eosin G. G. F. When the paper had faded white it was replaced successively by others until a distinct change took place in the color that was to be tested. Fastness to light is then expressed numerically by the number of pieces of Eosin paper required, as 2, 3, 4, etc. In many instances the color tested fades before the standard papers and the fastness is then recorded fractionally as 1/2, 1/3, etc. Results on more than fifty colors are recorded which vary in value from 1/4, in the case of Congo red, to 11 in the case of thioindigo scarlet R. Some difficulty is experienced in determining the exact point at which the Eosin test paper should be changed.

## Colloid Chemistry

### The Rôle of Colloids in Chemical Processes

Chem. Met. Eng., Oct. 15, 1918, p. 630

This is an abstract of Mr. J. Alexander's forthcoming book on "Colloid Chemistry" and cites many interesting examples of the rôle of protective colloids, adsorption, Brownian movement, etc., in applied and industrial chemistry.

## Organic Chemistry

### Photographic Sensitizing Dyes: Their Synthesis and Absorption Spectra

L. E. Wise and E. Q. Adam

J. Ind. Eng. Chem., 1918, p. 801

The paper is limited to an account of dyes derived from alkylated quinolines. These fall into four main groups differing in methods of synthesis, in absorption spectra, and in their sensitizing action:

A. The *isocyanines* are formed by condensation of alpha-methylated quinolinium alkyl halides (quinaldine derivatives) with themselves or with quinolinium halides. Sensitize chiefly in green and yellow.

B. The *cyanines* are formed by condensation of gamma-methylated quinolinium alkyl halides (lepidine derivatives) with quinolinium alkyl halides. Sensitize in yellow, orange and red.

C. The *pinacyanols* are formed by condensation with formaldehyde of two molecules of quinolinium alkyl halide, at least one of which must be alkyl methylated. Sensitize in yellow, orange and red; have displaced cyanines.

D. The "*dicyanines*" are formed from alpha-gamma-dimethyl quinolinium alkyl halides. Sensitize in red and infra red.

A brief account of the production of intermediates and methods of synthesis is given, and indication of the probable reaction mechanism and formulæ. It is stated that spectrophotometric measurements of the absorption curves were made but only the extinctions and wave lengths for maxima are given, in 95% alcohol.

### Methods of Analysis used in the Coal Tar Industry.

J. M. Weiss

#### II. Distilled Tars and Pitches

J. Ind. Eng. Chem., 1918, p. 817

Very useful article giving precise detail of the empirical tests and analytical methods used by the Barrett Co. for these materials.

### Manufacture of Glycols

H. Hibbert

Chem. Met. Eng., Oct. 1, 1918, p. 571

Glycols of the type  $R\cdot\text{CHOH}\cdot\text{CHOH}\cdot R$  are prepared by treating olefins of the type ethylene with chlorine and heating product with water and alkaline carbonates in a closed vessel. These glycols are less viscous than glycerine and possess a marked hygroscopic property. When nitrated they form valuable explosives, mainly because they freeze at a lower temperature than nitroglycerine, no intermediate, unstable crystalline substance is formed when they freeze, and they when compounded with nitrocellulose do not erode the barrel of a gun as much as cordite does. Sugar can be nitrated when it is dissolved in the glycols and the resulting products possess many valuable properties not associated with any known type of explosives. The author looks for a big advance in the glycol field at the close of the war.

**Advance in Industrial Organic Chemistry**  
**Since the Beginning of the War**

S. P. Sadtler

Chem. Met. Eng., Oct. 1, 1918, p. 556

A review of the expansion in American organic chemical industries since the war began.

**Alcohol in the Arts and Industries**

E. H. Leslie

Chem. Met. Eng., Oct. 1, 1918, p. 566

A brief review of the wide use of alcohol.

**Organic Synthesis and the**  
**du Pont Company**

C. L. Reese and C. M. Stine

Chem. Met. Eng., Oct. 1, 1918, p. 569

Evolution of new explosives leads to commercial development of many new synthetic organic substances.

**The Use of Micro-organisms in**  
**Chemical Industry**

E. G. Genoud

Chem. Met. Eng., Oct. 15, 1918, p. 616

A general survey of some of the uses of micro-organisms. Some future possibilities are mentioned.

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## **Books**

### **Recent accessions to the Library:**

**Illustrated Guide and Descriptions of Photographic**  
**Inter-Lens Shutters with Directions for**  
**Cleaning and Repairing**

W. O. Hammer

A booklet intended to assist watch makers and camera repairers in making minor repairs to camera shutters. The descriptive matter is very scant, although the booklet contains excellent enlarged illustrations of the interior mechanism of seventeen well-known shutters which should prove useful for reference when re-assembling.

**Color in Relation to Chemical Constitution**

E. R. Watson

Longmans, 1918

This work, a member of the series of monographs on industrial chemistry now appearing, gives an excellent indication of the awakening of the chemical industry in England. It contains a clear and unbiased criticism of the various theories of the color of organic compounds, considerable, but not undue, prominence being given to the author's own theories. A large number of absorption spectra of organic substances is given in the text. There is also a short description of spectrometric methods, including, we are glad to note, the spectrophotometer. The work is not free from minor errors, as for instance, the consistent reference to the "iso-nitro" grouping as "iso-nitroso" and to the "Eastern Kodak Co."

**The Advantages of Photography, Its History**  
**and Modern Appliances**

A. E. Garrett

# Patent Abstracts

## U. S. Patents

1277411

J. A. Hansen D1313

A Drier for Freshly Coated Blue-Print Paper in which the edges of the paper are held by curved guides out of contact with the heating pipes.

1279276

J. I. Crabtree, Assigned to E. K. Co. J82

A Process of Tinting Photographs especially motion picture film by using inorganic salts in place of organic dyestuffs. The salts are precipitated in colloidal or finely divided condition throughout the gelatine layer in which the silver image is suspended.

1279248

E. R. Bullock, Assigned to E. K. Co. J87

A Process for Producing Colored Images which comprises a formation of an image in a highly oxidized salt, reducing the salt to a lower state of oxidation by an organic reducing compound which is simultaneously oxidized to produce an insoluble colored compound forming the colored image. Several methods are given. In the preferred embodiment the silver image is converted into silver ferricyanide and is then toned by an organic substance such as benzidin.

1277040

P. D. Brewster, Assigned to Brewster Film Corp. K2117

A Two-Color Camera having a light-splitting mirror immersed in a glass-sided cube containing liquid of substantially the same refractive index as the glass of a mirror. A modification for three-color work is also disclosed.

1278211

C. Raleigh and W. V. D. Kelley, K266 K/24  
Assigned to Prizma Inc.

A Color Screen for taking motion pictures consisting of a disk-like screen divided into four sectors, each sector having two differently colored screens covering part of it and a transparent place between these portions. The exposure is made through a colored portion and a transparent portion, the latter part of the exposure intensifying that taken through the screen. The sizes of the colored and of the transparent portions in the various sectors are so proportioned that the resulting exposure through each sector will be the same.

1279065

M. J. Wohl and M. Mayer, Assigned to Prizma, Inc. K24

A Method of Projecting Motion Pictures in Natural colors in which a series of pictures, which represent the objects as taken through different colored screens, are projected through a plurality of color screens. The projecting screens may be on a rotating disk in which two different colors follow each other in the projection of a single picture area or in which the screen consists of the two different colors through which the picture area is projected.

1278302

J. Campbell K/24

A Motion Picture Film in natural colors is made by exposing through a rotating light filter. An exposure is made upon one picture area through two different light

screens either consecutively or simultaneously and then on the next picture area through two other light screens. The positives made from these negatives have color screens attached to them complementary to the screens through which the pictures were taken.

1278161

W. V. D. Kelley, Assigned to Prizma Inc. K/43

A Method for Making Motion Pictures in Natural Colors. Negatives are made through red and green screens upon alternating exposure areas. The red negatives are then printed and developed and the image reduced to silver iodide. The film is then sensitized and the green negative image printed thereon. The film is then dyed in a bath consisting of one dye which is mordanted by the silver iodide and of another which affects the differentially softened portions of the film, so that a single dyeing operation only is necessary for the application of both colors. The silver is removed in the hypo bath, leaving the dye alone in the gelatine surface. If a four-color record is desired, two colors are applied upon one side of the film and two other colors are applied in the same way on the other side in registration with the first series of pictures.

1278162

W. V. D. Kelley, Assigned to Prizma Inc. K/43

A Method for Making Motion Pictures in Natural Colors in which four colors are used. The negative is taken with the four colors one after another on successive picture areas, but the positive is made upon a film with emulsion upon each side, the green picture registering with the red and the blue with the yellow, so that the positive is half the length of the negative. The positives are dyed appropriate colors and projected like ordinary motion pictures.

1278667

F. E. Ives K/43 KJ88

A Method of Making a Photograph or Film by a Multi-Color Process in which the red selection negative is first printed upon the film and a silver image is developed. This silver image is converted by any suitable means into a green color image. A diapositive is then made from the green selection negative. This is toned to copper ferrocyanide and is then dyed red, the copper salt acting as a mordant. This diapositive is then placed in proper register over the printed film, and is used as the printing film to obtain a second image, the film having been re-sensitized. This second image is colored red by any suitable method. The use of the dye copper mordanted diapositive assists in registry and also shows what the final color of the finished film will be.

1278668

F. E. Ives K/43 KJ88

A Method of Making a Colored Photograph or Film in which one color selection silver image is made in the colloid layer by the usual process and is converted into a copper ferrocyanide image. The film is then sensitized with ferric ammonium citrate and the second color selection impression is made. This is developed and the film is then submitted to a dye, which is mordanted by the copper salt. There thus results in a single colloid layer a red image and a blue image in register with each other. The tone of the blue may be controlled by altering the developer.

1278010

Paul Poetschke X421

A Cement for Obstructing X-rays. It is composed of lead carbonate, magnesium oxide and magnesium chloride.

1277468 A. D. Parfitt 062

A Method of Displaying a Rebus in which one clew is continuously projected while another clew is progressively developed, and still a third clew, which originally was present, disappears.

1279099 C. A. Gilbert 0631

A Method of Taking Motion Picture Films in which one set of pictures is taken in silhouette and then another set of pictures in silhouette on a different film. They are then printed on the same film, the pictures being combined. By this means miniature models may be used for backgrounds and one set of images may be taken on a very much larger scale than another so as to give extraordinary effects.

1279164 A. A. Ruttan and G. L. Kester, 2131  
Assigned to E. K. Co.

A Camera with a Reflecting Mirror between the lens and the focal plane for finding and focusing. A simple form of shutter is used before the lens, and the operating mechanism of this is so connected to the means for throwing the mirror that the shutter is open when the mirror is in reflecting position. The shutter is closed before the mirror moves and when the mirror is out of reflecting position, the shutter is operated. The invention comprises the mechanism for operating the shutter and mirror in proper timed relation.

1277462 R. Newman 214 2542

A Combined Film Pack Camera and Developing Tank. The tank is arranged on the back of the camera and contains separate holders, into which the exposed films are successively drawn, by means of the usual tabs. After the tank is filled, it may be removed and the developing liquid poured in.

1277461 F. Y. Murazen 215

A Roll Film Camera in the top of which is a hand actuated gear driving a detachable fan. (It is not stated that the fan serves any photographic purpose.)

1278692 E. Leschbrandt 2153

A Camera having provision for light-printing legends upon the film. A curtain with a series of apertures is provided, and a second movable curtain with a series of characters. The characters are placed one at a time before a single aperture, and each character light-printed separately through its aperture upon the film.

1277919 J. F. Haworth 2155

A Panoramic Camera having a winding mechanism for the film which also actuates the shutter. By continuously turning the winding mechanism, the shutter will be actuated, and the film wound alternately. The mechanism is also adaptable for use in a motion picture camera.

1278896 H. D. Farquhar 216

A Camera and Stand intended particularly for process work. A rather heavy adjustable framework is used, upon which the camera as a whole is adjustable in various ways, and the easel which is to be copied is also adjustable.

1277202 G. M. Dye 258

A Photographic Print Drier of the type in which a belt carries the prints over a heated drum. A rope is sewn along one edge of the belt and is engaged by suitable guide rollers. The belt passes over the idle rollers, which are so inclined as to give the belt a tendency to drift transversely away from the rope, thus keeping it flat.

1277952 E. A. Kroner 258

A Photoprint Drier in which the prints are carried by means of two wide belts around a heated drum. There is an improved device for taking up the slack in the belts. There are also ropes sewn into the longitudinal edges of the belts and are engaged by rollers on the framework of the machine so as to keep the belts flat and in proper alinement.

1279788 P. W. Tierney, Assigned to E. K. Co. 2614

A Leg for a Folding Camera which is hinged to the bed, It has a tripod socket so that a tripod may be attached for use for either position of the camera, depending upon whether the leg is folded against the bed or at right angles thereto.

1280013 J. Goddard, Assigned to Seneca Camera Mfg. Co. 2614

A Ball and Socket Support for a Camera, which support may be mounted either upon a tripod or attached to any convenient substitute for a tripod, such as a chair back, etc.

1277592 G. H. Horton and J. M. Miller 2626

An Electro-magnetic Device for actuating a camera shutter from a distance. It must be reset after each exposure.

1278132 C. F. Fulford and C. W. Carroll 264

A finder for Cameras comprising two lenses and a reflector between them, each of the lenses being provided with an aperture conforming to a field of view. The finder is supported so that it may be turned so that either aperture may be the one into which the operator looks, while the other one serves as the objective lens for the finder.

1279407 W. E. Mowrey 2651

A Plate Holder having adjustable kits so that plates of different sizes may be used therein.

1278080 H. J. Kubiak, Assigned  $\frac{1}{2}$  to Joseph Stasinski 2682

An Exposure Meter of the type in which the light from the subject is reduced by successive layers of translucent material until the point of minimum visibility is reached. The translucent sheets are inclined at an angle and the light from them passes through a narrow opening to a pair of inclined mirrors which direct it into the observing hood. The position of the opening is adjustable. The moving parts of the meter may be directly connected with the mechanism of a shutter.

1279102 R. E. Green 275

A Retouching Pencil connected by a delicate spring to a rapidly moving trigger, so that when the operator uses the pencil it will be vibrated in his hands.

- 1277195 H. M. Connor and D. D. Miles, 3201  
Assigned to Safetygraph Educational Film Co., Inc.

A Feeding Mechanism for Motion Picture Projectors in which the film engaging teeth are carried by an oscillating carriage which is moved through its cycle by levers and links driven from two separate cams.

- 1277559 R. J. Emory, 3208  
Assigned to Baird Motion Picture Machine Co.

A Motion Picture Projector the takeup reel of which is driven through a friction clutch, the friction of which increases in proportion.

- 1277958 J. A. LeRoy 3204-3209

Film Containers for use in Motion Picture Work having devices for preventing the spread of fire to the reels contained therein. The film passes out of the container between a set of fixed rollers and gravity actuated rollers which press down upon the film. Should the film break, the latter rollers would press tightly against the fixed rollers, closing the opening.

- 1279762 E. W. Rossman and L. L. London,  
Assigned 1/5 to Monte London

A Reel for an Endless Film in which the film is continuously wound from the innermost convolution of the roll.

- 1277951 F. Koch and H. Granville 3209

A Safety Device for Motion Picture Projectors in which a spring-pressed arm is held in place by the film and it holds a spring shutter open. Should the film break, the arm is released and the shutter closed, this closing an electrical connection which operates an audible alarm.

- 1278591 J. C. Chambers 3209

A Motion Picture Projecting Mechanism having a device for keeping the film under tension. Should the tension be released, for instance, by its breaking or by the film catching fire, the lighting circuit is broken and a shield drops to prevent communication of the heat.

- 1278526 C. Ubelmesser and W. Wenderhold, 321  
Assigned to Polychromatic Film Corp.

A Projector in which a colored screen is placed in the cone of light and is adjustable to and from the source of light. The screen intercepts the entire cone in different positions, but it is stated by the patentee that when closer to the focal point so that the cone of rays is more intense, the effect of the screen is reduced and the color paler. (This is, of course, impossible.)

- 1277991 J. Moltchen 323

A Combined Motion Picture Projector and Sound-Reproducing Machine, the mechanism being contained in a small cabinet for home use.

1279262

P. L. Clark 324

A Projection Screen consisting of a surface composed of a very large number of small, curved, specular elements arranged in rows and the curvature of each element being designed to bring the image projected upon the screen to a focus in the desired plane in which the observers are located. It is intended to be used in such locations as the projection of a picture from one building upon a screen across the street to be viewed from the sidewalk or street below the screen. The patent specification contains a number of modifications and the theory of the necessary shape of the elements is elaborated to a considerable extent.

1277558

H. Dumars and J. Darby 328

An Advertising Machine for successively exhibiting a series of pictures upon a film strip which is alternately wound backward and forward. The portion of the film in exhibiting position is intermittently clamped by glass plates to hold it flat.

### British Patents

1277482

A. C. Roebuck 366

Assigned to The Enterprise Optical Mfg. Co.

A Motion Picture Machine having an anti-rattling drive between a handle and the driven mechanism.

117864

L. F. Douglass K/24.

Cinematograph Films. Cinematograph films having alternate pictures of different color values are dyed or toned by stopping out alternate pictures with varnish or other adhesive material, dyeing or toning the exposed pictures in a suitable bath, removing the stopping, stopping out the dyed or toned pictures, appropriately dyeing or toning the exposed pictures and finally removing the stopping. The colors are thus produced in the film itself. Dyes for use in the process are set forth in the specification.

118039

A. D. Shiels 044

Photography. Relief photographs are produced by backing a thin print with a modelling composition, modelling the composition from the front, allowing the mode to harden, removing the print, and replacing it by a second similar print. The modelling composition may be similar to that used by dentists and consist of stearin, gum copal and French chalk, such compositions being softened by subjecting them to a moist heat. Specification 117135 is referred to. Reference has been directed by the comptroller to specification 5721/98.

117887

H. Degens 1212

Cinematograph Films. The edges of cinematograph films are reinforced with continuous threads of silk, cotton, or the like stitched to the edges adjacent to the sprocket holes.

117841

R. H. Davis 219-089

Submarine Photography; Shutters. Apparatus for photographing subaqueous objects comprises a camera located in a water-tight casing having a lens in alinement with the camera lens, and water-tight lamp-chambers fitted to the casing and having lenses. The camera shutter is operated electrically from above the water surface or by a diver by means of a cable carrying current to an electro-magnet the armature of which strikes the shutter lever. The lamps may be supplied with current from above the water surface or may each be provided with a battery or accumulator. Reference has been directed by the comptroller to specifications 19215/13 and 26278/13.

118231

D. S. B. Shannon 3201

Cinematograph Apparatus. A film is intermittingly fed by a mutilated gear and is locked between two advances by pins entering the perforations under the action of gear-driven crank-discs and rods.



# Monthly **ABSTRACT** Bulletin



January, 1919

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T. F. Currier,  
Belmont

# Monthly Abstract Bulletin

„Vol. 5, No. 1

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January, 1919

## Errata

In the *Abstract Bulletin* for December, 1918:

On page 206, line 17, instead of *Kar*, read *Karrer*;

On page 218, the heading *British Patents* should be read after, not (as printed) before, patent No. 1277482.

## Photography

### New Method of Bath Sensitizing Plates

E. Koenig C114

Zeits. Reprod., 1918, p. 7

Phot. Rund., 1917, p. 257

When plates are sensitized with water solutions of the isocyanines trouble is encountered with fog and spots. The use of alcohol mitigates these troubles, but with large amounts of alcohol the sensitizing is much less and with strong alcohol no sensitizing effect is obtained. The author has found, however, that by bathing plates in an alcohol solution of the dye and then, after drying, washing in water, good sensitizing is obtained without defects. This method was not found satisfactory with erythrosine.

### The Use of Old Printing-out Papers

F. Formstecher E135

Zeits. angew. Chem., 1918, 31, p. R. 50

Deals with the preservation of printing-out papers by interleaving the sheets with paper.

G6

At the Royal Photographic Society, Mr. Renwick stated that an acid hypo bath fixed negatives which contained the oxidation products of the developer more rapidly than a plain hypo bath since the acid dissolved these oxidation products and thus freed the pores of the gelatine.

B. J., 1918, p. 522

### Iodine and Thio- carbamide as a Cutting Reducer for Negatives and Positives

J. Becher and M. Winterstein

H1 1665

Chem. Zentralbl., 1918, 89, p. 65,

from Z. wiss. Phot., 1917, 17, p. 1

Instead of cyanide or Farmer's reducer, the following solution is recommended:  
For papers: 100 cc. 4% thiocarbamide and 2-4 cc. iodine in potassium iodide (1:2:200).  
For plates: 100 cc. 4% thiocarbamide and 1-2 cc. iodine in potassium iodide (1:2:200).

### Drying Negatives

H3

B. J., 1918, p. 522

It is suggested that an electrical apparatus for drying negatives, combining a fan with a heating apparatus, might be valuable.

## The After-treatment of Bromides

J7

B. J., 1918, p. 510

Bromides can often be improved by after-treatment. In the case of a flat, fogged print a general reduction with iodine is suggested. Local reduction by the use of iodine and cyanide or ferricyanide and hypo is often valuable. Rusty colored prints may be improved either by intensification with chromium or by gold toning. If abrasion markings cannot be removed by the ordinary method of friction they are best reduced by a very dilute ferricyanide or iodine reducer.

## Uneven Sulphide Toning

J84

B. J., 1918, p. 498

A manufacturer suggests to the journal that where parts of the image are found to refuse to bleach in redevelopment toning one drop per ounce of strong ammonia should be added to the bleaching solution.

## Vitrified Photography

K

Process Engravers' Monthly, Sept., 1918, p. 142

A note on a process by Mr. Louis Crabtree, said to be the last word in color photography, but no details are given.

Investigation on the Theory and Practice  
of Color Stereoscopy

H. Lehmann K043

Beibl. Ann. d. Phys., 1918, 42, p. 112, from  
Zeits. wiss. Phot., 1917, 17, p. 49

The method of J. Ch. d'Almeida is thoroughly investigated and the manufacture of the color filters is described.

## Decennia Practica—Color Photography

K 93

B. J. Col. Sup., 1918, p. 42

## The Bleach-out Process.

The Behavior of Glycol to Light in the  
Presence of Bichromate

E. Valenta 012

Zeits. angew. Chem., 1918, 31, p. R. 210, from  
Phot. Rund., 1918, p. 64

The behavior of glycol is similar to that of glycerine. Anhydrous glycol saturated with sodium bichromate turns green when exposed to daylight.

## Chemical Fogging ('Photechie')

Lüppo-Cramer 012

Zeits. angew. Chem., 1918, 31, p. R. 101

- (Action of Sunlight on Silver Chloride) Lüppo-Cramer 012  
Colloid Chemistry and Photography  
Chem. Abst., 1918, p. 2287, from Koll. Z., 1917, 21, p. 154  
(See *Abstract Bulletin* for Sept., 1918, p. 142.)

- Colloid Chemistry and Photography R. Lorenz 012  
Koll. Zeits., 1918, 22, p. 103

Claim of priority over Lüppo-Cramer as to observation of dispersed ultra-microscopic and microscopic silver nuclei in illuminated silver halide crystals.

- The Decay of Chemical Fogging Effects Lüppo-Cramer 012  
Zeits. angew. Chem., 1918, 31, p. R. 14, from  
Koll. Z., 1917, 20, p. 276

The action of light on resin contained in wood or paper produces ozone or hydrogen peroxide. The effect of these substances on light sensitive materials falls off more rapidly than that produced on starch iodide paper. (The author terms these chemical fogging effects "photechisch".)

- The Photo-chemical Decomposition of J. Vránek 012  
Potassium Cobalti-oxalate  
Zeits. angew. Chem., 1918, 31, p. R. 101

- Photo-physical Disintegration of Silver Lüppo-Cramer 012  
Halides as a Result of the Explosive Release of the Halogen  
Chem. Zentralbl., 1918, 89, p. 64, from  
Koll. Z., 1917, 21, p. 28

If silver bromide plates are exposed to x-rays and then to daylight, after a short time the x-ray exposure appears as a reddish color on a green or blue background. Various reactions of this kind on the different photo-halides will be investigated later.

- The Ripening of Mercury and Silver Lüppo-Cramer 012  
Iodides by Light  
Chem. Zentralbl. 1918, 31, p. 64, from  
Koll. Z., 1917, 21, p. 77

The disintegrating action of light on silver, mercurous and mercuric iodides in the presence of different pressures of iodine has been investigated and the effect of the treatment on the transparency of the plate is compared with that produced by ammonia on exposed silver bromide plates.

- The Activation of Development Nuclei Lüppo-Cramer 014  
Zeits. angew. Chem., 1918, 31, p. R. 14, from  
Phot. Korr., 1917, p. 169

Colloidal silver not only absorbs the fixing medium (sodium thiosulfate or potassium cyanide) but also silver bromide. Hence the stability of the latent image after fixation against oxidizing media.



face to a good density before it has penetrated through the emulsion while although a weak developer penetrates at the same rate as the strong developer, it does not develop so rapidly, so that with a strong developer there is a tendency for the image to be confined to the surface of the emulsion, and with a weaker developer for the image to be more evenly distributed through the whole emulsion.

The Correction of Telescopic Objectives T. Smith 019  
*Phil. Mag.*, Nov., 1918, p. 405

A criticism of some of the statements in a paper by A. O. Allen (*Phil. Mag.*, June, 1918) and an exposition of some of the advantages of algebraic calculation of aberrations.

A Talk About Lenses 019—031  
*B. J.*, 1918, p. 490

Editorial discussion and criticism of address delivered to the Photographers' Association of New England by Mr. J. A. Dawes. The speaker's views as to the value of soft focus lenses are upheld and the editor agrees with Mr. Dawes that in the near future the soft focus lens will be the standard lens for portraiture.

Better Results 03  
*Studio Light*, Nov., 1918, p. 8

An article pointing out the advantages to be gained by using a long scale paper like Artura, though to secure the best results it is shown that a long scale negative must be used also.

The Hands in Portraiture C. H. Davis 0314  
*Photo. Minature*, Oct., 1918

A clear statement of the principles governing the treatment of the hands in portraiture, written by one skilled in this difficult art; with thirty-seven illustrations showing what to do and what not to do.

Panoramic Photographs 035  
*B. J.*, 1918, p. 489

The use of the panoramic camera is recommended to British professionals. It is suggested by the author of the paragraph that a clockwork regulator with a fan might be fitted to the camera. (It is not clear to what panoramic camera the author refers, as the Cirkut is fitted, of course, in the way suggested).

Dichroic Fog and Its Removal E. Coustet 041  
*Zeits. angew. Chem.*, 1918, 31, p. R. 14

Dichroic fog caused by development can easily be removed by a short treatment with the following solution:

Copper sulfate	.	.	3 gr.
Sodium chloride	.	.	3 gr.
Water	.	.	100 cc.

If the picture is affected by this treatment, it can be redeveloped.

## Photographic Cameos

048

Kodakery, Dec., 1918, p. 12

A photographic cameo which suggests relief is made as follows: A film positive is made from a negative of such quality that corresponding tones of the positive and negative are of the same density, so that when the positive and negative are placed in register they neutralize each other. The cameo is produced by moving the positive so that it is slightly out of register with the negative and then making a print in the usual way.

## Tinting and Toning of Eastman Positive Motion Picture Film

0645

Mot. Pict. News, Nov., 1918, p. 3255, and  
Dec., pp. 3409, 3580, 3756

A reprint of the booklet issued by the Company on the subject.

## Aero-photography

083

B. J., 1918, p. 526

A reprint of an article from "Flying," of a popular rather than a technical nature.

## Methods of Photographic Photometry

J. Baillaud 093

Beibl. Ann. d. Phys., 42, 1918, p. 109, from  
Journ. de Phys., 5, p. 131

In order to compensate for local differences the narrow fog strips between rectangular steps of a time scale are, after completion of the exposure, all given an equal exposure. In order to prevent interference from the grain of the plate a photometer similar to the Hartmann microphotometer was used fitted with a Lummer-Brodhun cube and a neutral comparison wedge but arranged so that the cube surface was in focus instead of the grains of the emulsion.

The Illinois Eclipse Expedition to  
Rock Springs, Wyoming

J. Kunz and J. Stebbins 096

Pop. Astron., 1918, p. 665

The authors present preliminary results of measurements of the intensity of the light of the sun's corona taken during the eclipse of June 8, 1918. A potassium photo-electric cell was used, the coronal light was compared to that of a standard amyl acetate candle, and a preliminary value of 0.6 candle at 1 meter was obtained.

The Influence of a Preliminary Exposure of  
Photographic Plates on the Reproduc-  
tion of Faint Luminosities

J. Rheden 096

Chem. Zentralbl., 1918, 89, p. 65, from  
Z. wiss. Phot., 1917, 17, p. 33

The author refers to the use of this phenomenon in astronomy.

Usefulness of a "Movie" Camera for Photograph-  
ing Phenomena of Solar Eclipses

E. B. Frost 096

Pop. Astron., 1918, p. 697

At the eclipse of June 8, 1918, the author used a motion picture camera for the purpose of recording changes in the flash spectrum during the few seconds in which

the phenomenon occurred. Clouds and haze interfered during the first part of the eclipse but several hundred pictures were obtained which showed excellent definition. The method promises to be of considerable value for obtaining accurate records of changes in the spectrum and also in the corona of the sun.

The Pigment Process and Imitations of It. I O. Mente /8  
Zeits. angew. Chem., 1918, 31, p. 210

Erythrosine as a Sensitizer for Carbon R. Renger-Patzsch /82  
Prints and Gum-Prints  
Zeits. angew. Chem. 1918, p. R. 15  
Reference to Meisling's process.

The Bromoil Process A. Kaiser /89  
Zeits. angew. Chem. 1918, 31, p. R. 102, from  
Phot. Rund., 1918, p. 26

On the Theory of the Bromoil Process Wurm-Reithmayer /89  
Zeits. angew. Chem., 1918, 31, p. R. 15, from  
Phot. Rund., 1917, p. 185

The development of these prints is not due to the fat-repelling action of the swollen highlight portions of the gelatine, but to the fact that the surface of the gelatine is smooth in the highlights and rough in the shadows.

Photographs on Copper Reboul /9  
Zeits. angew. Chem., 1918, 31, p. R. 102

A copper plate is treated with chlorine, exposed for one hour under a negative in daylight and fixed in hyposulphite of soda containing silver chloride. The pictures resemble daguerreotypes.

Some Everyday Volatile Solvents Used in J. Graham 1516  
Photography  
B. J., 1918, p. 523

The following solvents are discussed: turpentine, naphtha, solvent naphtha, benzene, benzoline, petroleum ether, gasoline, turpentine substitute, ether, alcohol, methyl alcohol, amyl alcohol, amyl acetate, acetone, Halle's solvent, nitro-benzene, oil of lavender, oil of wintergreen, oil of cloves.

Dyes in Photography A. Seyewetz 158  
B. J., 1918, p. 514

General article on this subject containing little new matter. It may be noted that Dr. Seyewetz states that the dyes used for tinting cinematograph films are usually basic. The use of basic dyes for this purpose is generally considered undesirable. He seems to think that the preparation of special dyes for photographic work would be commercially profitable. (It is more probable that the amount used is too small for their preparation to be worth while for any manufacturer.)

- The Keeping Power of Developing Solutions** J. Milbauer 163  
*Zeits. angew. Chem.*, 1918, 31, p. R. 50, from  
*Phot. Korr.*, 1917, No. 682

Developing solutions kept in open bottles completely lose their developing power: amidol and rodinal in 14 days, hydroquinone, metol and eikonogen in 20 days, pyrogallol in 46 days, glycine in 60 days and pyrocatechin in 100 days.

- Eye-Level Cameras** 213  
 B. J., 1918, p. 521

The use of cameras which are operated from the eye level instead of the position of a reflex is discussed.

- The Lecturer-Lanternist** 221  
 B. J., 1918, p. 521

In an editorial it is pointed out that now that half-watt lamps are available it may be possible for a lecturer to operate his own lantern. There are many old patents for controlling the slides but these were of no value because the light sources used required constant attention. With a steady light source it might be desirable for a lanternist to control his own slides.

- Lens-angle and View Finder** 264  
 B. J., 1918, p. 497

Attention is drawn to the importance of agreement of view-angle between the finder and lens of a hand camera. A method of making the adjustment is given.

- The Conservation of Projection Apparatus** A. S. Cory 321  
*Mot. Pict. News*, Nov. 1918, p. 3252

Hints on the care of projection machines.

Mr. A. L. Adams, well known maker of cameras, died on November 9, 1918.  
 B. J., 1918, p. 519

## Photo-Engraving

- Unretouched Photographs for Advertising** 07001  
*Inland Printer*, Nov., 1918, p. 180

Examples are shown, and it is pointed out that there is a false glamor given to advertising illustration by over-retouching which defeats its own object.

- Notes on Enamel for Zinc; Asphalt Resist for Zinc, and Pyroxylin in Collodion** S. H. Horgan 07004  
*Inland Printer*, Oct., 1918, p. 77

- Cement for Cracked Etching Machine Tank** S. H. Horgan 07006  
*Inland Printer*, Dec., 1918, p. 826

Hot melted shoemakers' wax poured into crack and the tank bound up with iron band with screw and nut joint.

## Should Screening Tools be Used?

07007

The American Printer, Oct. 5, 1918, p. 48

Deprecating the use by printers of gravers and hammers to soften the edges of vignetted half-tones.

## Acid-Resisting Inks

S. H. Horgan 07009

Inland Printer, Dec., 1918, p. 327

Among the substances introduced into etching inks to make them acid resistant are Asphalt, Rosin, Beeswax, Burgundy pitch, Canada pitch. The best softening medium for ink is stated to be Canada Balsam which also has the greatest acid resisting properties.

## Coated Paper for Etching

07009

Printing Art, Oct., 1918, p. 127

Description of manipulation of paper used for making mechanical overlays and underlays.

## Wax Engraving

071

Inland Printer, Nov., 1918, p. 199

Formula for wax resist is given as follows:

Beeswax,	4 ozs.
Burgundy pitch,	$\frac{1}{4}$ oz.
Zinc Oxide,	1 oz.

Melt and spread with a comb over the heated levelled plate.

## Glycol as a Substitute for Glycerine in

A. Albert 07219

## Lithography

Zeits. angew. Chem., 1918, 31, p. R. 25, from

Phot. Korr., 1917, p. 175

The moistening of lithographic plates by glycol is much quicker than by glycerine.

Offset Process for Printing on Leather  
and Wood

A. Heppes 0723

Printing Art, Nov., 1918, p. 203

Suggests in addition to making decorations for leather that offset should be used for printing on wooden boxes; with one man and boy about 1,600 impressions a day could be made.

## Maltreating the Half-Tones

07339

Printing Art, Nov., 1918, p. 199

A series of rules for printing half-tones.

## Illustrated Books

W. M. Ivens, Jr.

Printing Art, Nov., 1918, p. 118

An article illustrated with old wood cuts, but pointing out that modern photographic engraving methods have nothing to do with the artistic value of illustration.

**Mixing Colors**

Gordon Colt

Process Engrav., Oct., 1918, p. 157

Deals with the matching of colors by means of printing inks and explains mixing practices.

**Offset Work in Printing Liberty Bonds and for  
Department Store Printing**

J. A. Heppes

Printing Art, Oct., 1918, p. 125

**Photo-Engraving an Art, not Manufacture**

S. H. Horgen

American Photo-Engraver, Sept., 1918, p. 385

An article showing that many of the early photoengravers were artists.

**Review of Annual Convention of Photoengravers' Union**

Photo-Engravers' Bull., Sept., 1918, p. 10

Deals with working conditions throughout the industry and indicates present aims of the Union.

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## Physics

**Application of the Quantum Theory to Photo-chemistry**

E. Warburg

Beibl. Ann. d. Phys., 1918, 42, p. 49

Theoretical.

**A Critical Essay on Fundamental Photometric  
Definitions and Constants**

J. Teichmüller

Beibl. Ann. d. Phys., 1918, 42, p. 108, from Elektrot.

Zeits., 1917, 38, pp. 296, 308

The importance of making a distinction between physical light and physiological light is emphasized. Theoretically there exists three kinds of luminous sources: 1, vibration centers; 2, the point of a luminous surface; 3, a point source, such as is assumed in measurements of intensity.

**Demonstration of a Precision Colorimeter**

A. L. Bernoulli

Beibl. Ann. d. Phys., 1918, 42, p. 112

The author describes a colorimeter with a solution container the end walls of which need not be parallel, and for which any vessel can be used.

**Diffraction of Plane Waves by a Screen  
Bounded by a Straight Edge**

F. J. W. Whipple

Phil. Mag., Nov., 1918, p. 420

The result is of interest, not only as containing the first complete solution of a diffraction problem but also as showing that Fresnel's integrals, devised for an approximate solution of the problem, suffice for the complete one.

The Dispersal of Light by a Dielectric Cylinder  
Phil. Mag., Nov., 1918, p. 365

Rayleigh

A mathematical treatment of the problem in the case of visible light dispersed by very fine fibers.

The Electro-Physics of Ionic Medication  
Arch. Radiology and Electrotherapy, Oct., 1918, p. 149

H. H. V. Cross

By means of x-rays and a fluorescent screen the author has been able to observe the electrolytic penetration of ions into gelatine and muscular tissue. The method is applicable to ions of high molecular weight. In particular potassium iodide was chosen, as the results could be checked by chemical analysis. Lead was also investigated. Medical conclusions are drawn.

Ideal and Real Photo-chemical Processes  
Chem. Zentralbl., 1918, 89, p. 259

F. Weigert

The Einstein law of photo-chemical equivalents only holds for ideal photo-chemical reactions and must not be applied without qualification to actual photo-chemical processes. The author formulates a new hypothesis of the transformation of radiation into chemical energy. This transformation in an absorbing system takes place only when the electrons rotating around positive centers travel in distorted orbits, this being enhanced by an induced effect on neighboring particles. This hypothesis is applied to photo-chemical systems, to luminescence, photo-electrical processes, and x-rays.

The Laws of Thermochemical Processes and of  
Photochemical Processes

M. Trautz

Zeits. anorg. Chem., 1918, 102, p. 81

(See *Abstract Bulletin* for Aug., 1918, p. 131.)

A New Method of Heterochromatic Photometry  
Chem. Zentralbl., 1918, 89, p. 991

T. Stenholm

A new method by which Purkinje's phenomenon is almost eliminated.

## Photophoresis

F. Ehrenhaft

Ann. d. Physik, 1918, 56, p. 81

It is known that under certain conditions light attracts and repels microscopic and sub-microscopic particles, that is to say, that matter can be separated by light. Quantitative determinations of these phenomena were made.

## Radiation from Yeast

E. Ludwig

Zeits. angew. Chem., 1918, 31, p. R. 210

A radiation emitted by yeast has been discovered by photography which is expected to be of therapeutic value.

**Recent Investigations on the Action of Gases  
on the Emissive Power of Metals**

**M. Ernst**

Chem. Zentralbl., 1918, 89, p. 325,  
from Z. wiss. Phot., 1917, 17, pp. 35, 68

It has been shown theoretically and experimentally that the emissive power of metals in which gases are dissolved is affected.

**The Reflector**

**N. A. Halbertsma**

Beibl. Ann. d. Phys., 1918, 42, p. 110, from Elektrot.  
Zeits., 1917, 38, pp. 482, 494

Deals with the distribution of light by reflectors.

**Studies in Illuminating Engineering**

**N. A. Halbertsma**

Beibl. Ann. d. Phys., 1918, 42, p. 110

Deals with the distribution of light from luminous sources.

**Use and Abuse of Roentgen Ray Tubes**

**C. N. Moore**

Amer. J. Roentg., Nov., 1918, p. 529

The physical limitations of Roentgen Ray Tubes from over-voltage and from use of an unrectified current are pointed out. Over-voltage causes over-heating of the tungsten target causing it either to melt or to deposit a metallic film on the tube, leading to a short circuit. Alternating current causes the tungsten to emit electrons which indirectly can puncture the tube.

**The Use of Gratings for the Diminution of  
Light Intensity**

**H. Krüss**

Beibl. Ann. d. Phys., 1918, 42, p. 111, from Zeits. f.  
Instrumentkunde, 1917, 37, p. 109

An improvement on the method of Ives.

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## **General and Inorganic Chemistry**

**Hydrogen Peroxide as a Reducing Agent**

**N. Kleinstück**

Ber. chem., 1918, p. 108

Silver chloride, suspended in caustic potash solution, is quickly reduced by hydrogen peroxide. Carbonyl chloride and phenyl carbonate also react with alkaline hydrogen peroxide, and so does a saturated solution of potassium carbonate if kept at 100° C. in a pressure bottle; the distillate obtained by passing steam through the products reduces ammoniacal silver oxide, and is therefore said to contain formaldehyde.

**Prevention of Back Flow with Water Pumps**

**Mestrezat**

Chem. Abst., 1918, p. 2262

Describes insertion of bicycle valve.

Some Applications of Silver  
Acetylide

J. Eggert and H. Schimank

Ber. chem., 1918, p. 454

In consequence of the absence of any gaseous residue after detonation.

The Ternary System; Sodium Sulphate, Ammonium  
Sulphate and Water. (The Utilization of  
Nitre Cake.)

H. M. Dawson

J. Chem. Soc., 1918, p. 675

Equilibrium diagram and isothermals from solubility data from  $-16^{\circ}$  to  $100^{\circ}$  are given. The double salt with four molecules of water formed at  $-16^{\circ}$  decomposes to the anhydrous form at  $59.3^{\circ}$ . Conditions for separation of sodium sulfate and ammonium sulfate are discussed.

## Colloid Chemistry

Anisotropic Colloidal Solutions

W. Reinders

Chem. Abst., 1918, p. 2269, from Koll. Z., 1917, 21, p. 161

Particles of such sols are probably crystalline. Anisotropy hastened by ripening at  $100^{\circ}$ .

The Capillary Layer as Seat of Chemical Reaction

S. A. Shorter

J. Soc. Dyers Colorists, 1918, p. 136

Discusses emulsification of oils and detergent action of soaps.

Coagulation and the Attraction of Particles

R. Zsigmondy

Chem. Abst., 1918, p. 2270

From results obtained with gold hydrosols it is calculated that the sphere of attraction of a primary particle is two or three times its radius. This is in agreement with results obtained by other writers in other ways. It is proved, therefore, that the discharged particles do attract one another when they come within this distance of one another.

Connection Between Color and Degree of Dispersity

K. Kirchhof

Koll. Zeits., 1918, 22, p. 98

The view that the color of disperse systems is determined by the size of the colloidal particles is considered in reference to the colors of the alkali metal sols and the changes which accompany the alteration in the valency of metal ions and the formation of complex ions. The relations exhibited suggest that the color is fundamentally connected with the size of the disperse particles, whether these are atomic, ionic, or colloidal in nature.

New Simple Ultra Filters

Wolfgang Ostwald

Koll. Zeits., 1918, 22, pp. 73, 143

Prepared by treating filter paper with 2% collodion, efficiency depends upon presence of moisture in the paper.

## New (Ultra-) Filters

R. Zsigmondy and W. Bachmann

Zeits. anorg. Chem., 1918, 103, p. 119

A new type of filter, termed a membrane filter, is prepared by drying solutions of certain colloids, under conditions not specified. The filters have a parchment-like appearance with a smooth surface, and it is claimed for them that they are strong, durable, and rapid. The size of the pores can be varied, and suitable membranes chosen for any desired purpose. The filters are especially suitable for filtering under reduced pressure, and an advantage is that after use they can be cleaned and used again with undiminished filtration velocity. They have been used successfully for filtering mixed colloids containing particles of different sizes.

## Rhythmic Diffusion Structures in Gelatine Salt-Jellies

M. Moeller

Koll. Zeits., 1918, 22, p. 155

The Liesegang phenomena are regarded as due in part at least to the structure of gelatine.

## Swelling of Gelatine

H. G. Bennett

Chem. Abst., 1918, p. 2458

Theoretical discussion advancing different theory from Proctor's "chemical combination plus ionization plus osmotic pressure" hypothesis. The author considers gelatine jelly two-phase system of minute particles, latter are "lyophile," i. e., have high affinity for solvent. Swelling phenomena depends on (1) influence of solutes on compression of the solvent, (2) absorption of charged ions by the disperse phase.

## Swelling of Gelatine—A Reply

H. R. Proctor

Chem. Abst., 1918, p. 2459

Proctor defends his theory and criticises Bennett's.

Telluric Acid and Alkali Salts as  
Semi-Colloids

A. Rosenheim and G. Jander

Koll. Zeits., 1918, 22, p. 23

Data on the colloids produced by polymerization of telluric acid and tellurates.

## Theory of Gel Structure

W. A. Osborne

Chem. Abst., 1918, p. 2269

## Photochemistry

## Rôle of Ultraviolet Light in Chemical Reactions

D. Berthelot

Chem. Abst., 1918, p. 2282

## Photochemical Reactions of Rare Earth Compounds, II.

A. Benrath

Koll. Zeits., 1918, 22, p. 112, from Z. wiss. Phot., 1917, 16, p. 253

Photolyses of alcoholic solutions of molybdates and uranium salts.

Photochemical Reactions in Aqueous Solution. II. A. Benrath  
Chem. Abst., 1918, p. 2317, from J. prakt. Chem., 1917, 96, p. 190

Recent Progress in Photochemistry E. Lehmann  
Zeits. angew. Chem., 1918, 31, p. R. 101

## Books

### Recent accessions to the Library:

Applied Optics—Translated and Edited by Steinheil and Voit  
J. W. French  
Blackie, 1918

This work is severely practical, being intended as a guide to the lens computer. Formulæ are given for tracing various classes of rays through a lens system, and are illustrated by many numerical examples. The illustrations are noteworthy, being done in colors. The chapter on an ideal lens system is especially good, although in common with the rest of the text it is marred by redundancy and repetition. The different classes of aberrations are given confused treatment. It is astonishing that the term coma does not appear once in the book. The translator has divided the work into two volumes, of which this is the first.

The Workroom T. C. Watkins  
Wilson Publishing Company, New York City

A bound volume of the more important abstracts occurring in the Workroom section of the Photographic Journal of America for 1918.

## Patent Abstracts

### U. S. Patents

1277429 A. T. Koppe J24—0722

A Step and Repeat Machine for Preparing Offset Plates. In this case the metal sheet is stationary and means are provided for moving the negative to the exact positions required.

1192675 (14517) A. G. Ogden J24—0722

A Step and Repeat Printing Machine, i. e., a device for making a multiplicity of prints from a single negative, in which the negative and light are stationary and the plate being printed moves. The device permits the prints to be very accurately placed when this is important for register work.

1273993 Carl Belcher, Assigned to Rotophot. Akt. Ges. K07137

A Process for making visible the various tones in Multicolor Rotary Photogravure Etchings so that retouching may be facilitated. Method consists of making different screens in tracing paper from shading mediums and printing these on the carbon tissue in the positions of the various tones.

1276226

Burgoyne Jones K0738

Process of Preparing Etched Plates, particularly for color work, so as to avoid "make-ready". Consists of printing the image and then stopping out the tone that is to print darkest, and etching the remainder of the plate, then that and the next tone and so on, so that finally the surface is in relief according to the darkness of the tone required. When this stage is reached the half-tone is printed and etched. (It is not explained how the contact which is essential for this final operation is obtained with a metal plate in varying relief.)

1281746

A. Allen, J. J. Murphy and H. A. Willard, K043 K227  
Assigned to the Panchroscope Corporation

A Multicolor Stereoscopic Picture in which the two views are printed upon backgrounds having complementary color values.

1280667

D. F. Comstock, K3117

Assigned to Kalmus, Comstock &amp; Westcott, Incorporated

An Optical System for the simultaneous taking of two images through different color screens. It consists of a system of lenses, behind which is a system of reflecting prisms which divide the rays into two paths. The prisms constituting the paths are so designed that they make the resulting images in the two different colors of identical size when they finally emerge upon the two exposure areas, the corrections being designed for the particular color that is to be recorded.

1281714

J. E. Thornton, Assigned to J. O. O'Brien K/34

A Screen Film for Color Motion Picture Work. The film base which may be carried on a metal or other inextensible support is coated with a thin layer of a suitable colloid, such as gelatine, etc. On this the pattern of one color is printed mechanically; it is then coated with another layer of colloid and the second color is printed. The completed screen is coated with a panchromatic emulsion as usual. A yellow filter may be incorporated if desirable. It is stated that a negative obtained on this film can be printed upon a positive film similarly prepared (this, of course, is incorrect.) Instead of using one colloid layer for each color, the support itself may be used for the first color.

1278117

J. S. Dawley 062

A Method of Introducing Backgrounds into Motion Pictures by means of a sheet of glass, which acts as a light-splitting mirror through which light rays are transmitted from the actors and are reflected from a small background into the camera.

1280735

W. &amp; D. Horsley 0649

A Method of Titling Motion Pictures. During the taking of the same, boards bearing suitable titles are brought into the lower part of the field of view. The boards are moved successively into and out of the field over U-shaped guides.

1280542

J. Powers 066—069

A Motion Picture Theater comprising a screen upon which the pictures are viewed by transmission and in rear of the screen a sound-proof booth containing elocutionists who can see the screen and talk in synchronism with the pictures. From the booth, telephone lines carry the sound to individual receivers in each theater seat.

1282073

N. M. Hahn 068

A Motion Picture Camera in which successive views are taken from two separate view points, in order to get a stereoscopic effect. A mirror pivotedly mounted directly in front of the lens throws through the lens the rays from one of two other mirrors mounted one on each side of the first mirror. In this way pictures are alternately taken from each of the fixed mirrors.

1276599

J. H. Weeks 07006

Process for Electro-chemically Etching Photoengravings. (There does not seem to be any novelty in this idea.)

1276600

J. H. Weeks 07006

Apparatus for Carrying out Electro-chemical Etching of Photoengravings.

1276697

L. J. Hertlin 074

A Process for Producing Printing Plates, especially of subjects of geometrical design, in which outlines are printed on celluloid, then blocked in with washable opaque paint, thus forming a negative which is used in the usual way. This may be done repeatedly for as many colors as are required.

1278885

H. Dreyfus 1513

A Process for the Manufacture of Cellulose Acetate insoluble in chloroform but soluble in alcohol-chloroform and in acetone. The main point in the procedure is the energetic cooling of the acetylating mixture previous to the introduction of the cellulose and the careful control of the temperature thereafter.

1280974

H. Dreyfus 1513

A Process of Making Acetone-Soluble Cellulose Acetate in which the condensing agent comprises a relatively large amount of sodium bisulfate and a small amount of free sulfuric acid.

1280975

H. Dreyfus 1513

A Process of Making Cellulose Acetate, insoluble in chloroform and alcohol-chloroform, in which the acetylation is started below zero centigrade and kept below 25 degrees centigrade throughout the process.

1279200

L. P. Wilson 1515

An Improvement in the Manufacture of Viscose whereby the oxidation of the alkali cellulose by means of suitable oxidizing agents is assisted by the addition of catalysts such as oxides or hydroxides of iron, nickel and cobalt.

1279328

W. H. Clover

1279329

L. P. Wilson 1515

A Process in the Manufacture of Viscose for shortening the time of the oxidation of the alkali cellulose by introducing an oxidizing agent such as oxygen or soluble peroxide.

1281080 Paul C. Seel, Assigned to E. K. Co. 1640

A Plastic Composition and Method of Making the same. It is adapted to the manufacture of "non-inflammable" film base. In the illustration given in the patent, the ingredients include cellulose ether and chlorinated naphthalene dissolved in chloroform and denatured alcohol.

1282373 C. P. Browning 2103

A Lens Carrier for Cameras. The lens may be positioned either centrally or may be moved upon a radial slide to an eccentric position so that multiple pictures may be taken.

1278323 W. F. Folmer, Assigned to E. K. Co. 2105

A Strong and Accessible Catch for holding in place the back of a roll film holder or camera.

1280958 R. S. Burdette 2105

A Film Mask adapted to be placed in cameras so that they may be used for roll film of a size smaller than they are designed for. A hinged backing member holds the film flat in the focal plane.

1282331 A. G. B. Vera, Assigned  $\frac{1}{2}$  to Charles Kemler 2107

A Vignetter comprising a large number of independent radially movable overlapping leaves. The opening may be made in any desired shape because of the independence of the blades.

1281175 A. E. Landefeld 2152

A Double Exposure Prevention Device in which the shutter is locked after actuation and is unlocked by the projection upon the winding system of the film spool engaging with the release member.

1281998 G. H. Parish 2152

A Double Exposure Prevention Device. When the shutter is actuated it is locked and simultaneously a blind is placed before the finders. The blind is moved and the shutter is unlocked by the turning of the key of the film spool.

1282177 G. S. Blankenhorn 2155—2914

An Apparatus for Making Panoramic Pictures in which a roll film camera of usual type is mounted upon a circular support. The circular support has marked upon it the exact angle covered by the camera, so that a series of views may be taken by moving the camera after each exposure exactly through the angle of view. The film is moved so that the consecutive exposures just touch one another, thus giving a panoramic effect.

1280638 J. Becker, Assigned to E. K. Co. 2171

A Copying and Enlarging Camera in which the object and image surfaces are automatically kept in focus throughout the range of movement by means of a radial cam. The latter, instead of having two surfaces at right angles to each other, makes a radical departure by arranging the cam faces at varying angles.

1280866 E. Schneider 221

A Dissolving View Apparatus. It consists of a lamp house with a single source of light. The light may be directed either through a front condenser or through a prismatic reflector and a condenser parallel to the first. It is used either for dissolving view work in ordinary stereopticon exhibitions, or when motion picture and stereopticon pictures are shown alternately.

1281092 J. H. Steen 241

A Collapsible Printing Device comprising a box in which actinic and non-actinic lights are placed. The printing frame is supported above the box by collapsible sides which fold down so that the structure as a whole is readily portable. A cover of the printing frame controls the lights in the usual manner.

1282668 W. W. Balentine 242

A Printing Frame having two rolls at each end, so that prints may be made from a continuous negative or tracing upon a continuous sensitized element. The frame as a whole is pivotally mounted so as to be readily positioned before the illuminant.

1280308 N. C. Sampson 248

A Printing Frame for Step and Repeat Printing. Flexible elements mask off the sensitized surface where it is under the negative, so that the latter can be repeatedly brought to unexposed portions until the surface has been printed all over.

1280240 R. Klein and T. Brueck, 2623  
Assigned to Ilex Optical Co.

A Between-the-Lens Shutter in which the instantaneous speeds are controlled by a retarding device comprising a chain of gears and an escapement which may be thrown into and out of action at the end of the train.

1280252 A. Lattau 2626

A Device for Automatically Actuating a Photographic Shutter in the absence of the photographer. A complex mechanism is arranged to cause time, instantaneous, or bulb exposure.

1280133 J. Becker, Assigned to E. K. Co. 264

A Direct Vision Finder of the asymmetric type which enables the photographer to gauge the view correctly while keeping his eye above the level of the finder.

1280844 C. A. Rich, Assigned to Ansco Company 264

A Photographic Finder in which the field of view automatically corresponds to the picture in the camera when taking either horizontal or vertical pictures. Two masks are arranged on plates at right angles, the mirror and viewing lens swinging through 90 degrees to co-operate with either of the masks, as may be desired. The frame carrying the mirror and lenses is supported by a swinging yoke, which permits the parts to move through the proper path when changing from horizontal to vertical pictures.

1281047

F. Matsui 264

A Photographic Finder in which the field of view is automatically masked to conform to the picture in the camera when changing from horizontal to vertical or vice versa. A pair of swinging blades automatically block off different parts of the usual maltese cross finder mask.

14532 Reissue

F. H. Avers, Assigned to Nicholas Power Co. 3104

An Indicating Device to show how much motion picture film has been used from a magazine. An arm bearing against the surface of the spool causes the movement of the indicator on the outside of the magazine.

1280676

J. Darby, 3102

Assigned to Francis B. Griffin and Edward C. Wallace

A Motion Picture Projector provided with a swinging arm carrying two rollers so arranged as to quickly establish a reserve loop of proper length between the continuous and intermittent parts of the film moving mechanism.

1281253

C. Kesses 32

A Motion Picture Projector intended by the inventor to throw a picture either from intermittently or continuously driven film. Adjustments for different widths of film are provided and rollers for feeding unperforated film are designed to co-operate with the continuous projecting system.

1282437

P. H. Krug 3201

A Loop Forming Wing for Motion Picture Machines in which the swinging member that forms the loop in the film has a large radius of curvature bearing against the film so as to avoid sharp bends which tend to crack the film.

1281131

M. B. Burgess 3203

A Motion Picture Shutter located between the lens elements at the point where the light rays most closely converge. The shutter is reciprocated by means of a crank driven by the film sprocket.

1279607

H. T. Sublisky 3203

A Clip for attachment to reeled-up motion picture film to hold the end of the latter in place. It comprises a label-bearing plate resting on the periphery of the film and two clips embracing the sides of the latter.

1282293

A. C. Roebuck 3205

A Mount for a Condensing Lens in which one element is readily adjustable for proper focusing.

1280968

M. DeCristofaro 3206

A Lens Support for readily adjusting the focus of a projection lens for motion picture or stereopticon work.

1281095 F. C. Taylor, Assigned to Ferdinand McCann 3209

A Portable Motion Picture Machine in which means is provided for extinguishing the light and stopping the motor if the film breaks. This is caused by a weighted arm which bears against the film and upon its breakage falls down and breaks the electric current.

1281970 C. F. Jenkins, 321 3209  
Assigned to the Graphoscope Co.

A Motion Picture Machine in which the light passes through a corner only of the casing through which the picture film passes. The light passes through an aperture in one side of the casing, through a reflecting prism, to the film and out through another aperture. The purpose is that the film shall not become heated.

1281169 G. A. Kerestes 324 067

A Motion Picture Target Apparatus. A motion picture is shown on a moving screen behind which is a second moving screen. The picture is used as a target in a shooting gallery and a shot puncturing the screen stops the apparatus so that light behind the screen shines through the perforations showing where the shot struck. After a definite time interval the screens start moving again, but have different rates of speed so that the holes are thrown out of registration and the light ceases to be visible.

1282154 C. S. Webster 328

An Automatic Motion Picture Apparatus for advertising purposes, in which an endless film is continuously fed with automatic means for extinguishing the light and stopping the motor should the film break. No attention is required after it is once started.

1281711 F. B. Thompson 353

An Apparatus for the Treatment of Motion Picture Film. The film is passed successively through a series of tanks, in each of which it passes over guide rollers at the top and bottom, the emulsion surface being always on the outside and out of contact with the rollers. The movement of the film is continuous. Means is provided for keeping the tension constant. The frictional contact between the film and the guiding rollers is relied upon to drive the film. Should the film break, the releasing of the tension will cause it to stop movement and the operator will thus become aware of the breakage.

1278992 W. Parkes, Assigned to Arthur L. Garford 366

A Hand Crank for Motion Picture Cameras which is rigidly maintained in position by a spring-pressed pin to prevent lost motion.

1279445 M. S. Rosenfeld, 387  
Assigned to Jacob Schechter

An Electromagnetic Machine for detecting portions of motion picture film which have been injured by the tearing of the perforations. Electrical contact is automatically made through the broken portions of the film, thereby actuating a signal.

## British Patents

118721

A. Akinine 067-324

**Optical-Projection Apparatus.** Cinematograph or other pictures are projected on to a frosted glass screen, and the image of the projected picture produced by a concave mirror is viewed by reflection in a mirror.

117888

J. Ruddiman Johnston 0713

This describes a method for using flat plates for rotary gravure work, the ends of the plate when on the cylinder being connected by a bridge piece.—B. J., Sept. 27, 1918, p. 439.

119328

A. J. Hain 07334/82

**Photo-Mechanical Printing Surfaces.** In the preparation of an etched photo-mechanical printing-surface, the printing plates are provided with isolated uniform areas of hardened gelatine which are light sensitive, or are associated with a sensitized emulsion, and are treated so as to increase their size laterally in accordance with the tones of the images to be printed. The following methods of procedure may be employed. (1) The areas are produced by depositing a film of gelatine sensitized with potassium bichromate either directly on to the plate or on to a layer of etching resist thereon, exposing the film to light beneath a screen having spaced openings or transparent areas, and washing out the soft gelatine. Other methods of producing isolated areas may be employed, if desired. The areas are sensitized with silver bromide or other metallic salt and the spaces between the areas are filled with soft gelatine, the plate being then immersed in a solution comprising 10 grains of potassium ferricyanide and 10 grains of potassium bichromate in 1 ounce of water. A positive print is squeezed into contact with the plate after it has been immersed in water, left for about 15 minutes and removed. The contact with the print causes chemical reaction which hardens the soft gelatine in the neighbourhood of the areas so that they are increased in size in accordance with the tones of the print. The still soluble gelatine is then dissolved out in hot water. (2) The steps up to and including the sensitizing with a metallic salt and the filling-in of the spaces with soft gelatine are carried out as in (1) and the plate is exposed under a negative. The plate is then immersed in a solution comprising 10 grains each of bromide, ferricyanide, and bichromate of potassium in 1 ounce of water, and the soft gelatine is removed as before. (3) The solution employed in method (2) is replaced by a solution of pyrogallol and citric acids, 3 grains each, and 15 drops of 20 grain silver nitrate solution, in 2 ounces of water, the plate after treatment with this solution being immersed in a 5 per cent. solution of potassium bichromate and afterwards treated to remove the soft gelatine. (4) The isolated areas are produced and sensitized as in (1) and the plate exposed beneath a negative or in a camera, developed, and fixed, being then immersed in a solution of lead nitrate 100 grains, potassium ferricyanide 150 grains, and acetic acid 25 minims, in 5 ounces of water. This treatment deposits lead on the isolated areas in accordance with the amount of metallic silver contained therein and appropriately increases their size. (5) The gelatine film first deposited as in (1) contains in addition manganese chloride, and after treatment as in (1) to produce isolated areas, the plate is flowed with a gelatine-bromide emulsion which surrounds and covers the isolated areas. After exposure under a negative, the plate is immersed for about two minutes in a solution of 10 grains each of bromide, ferricyanide, and bichromate of potassium in 2 ounces of water and 1 minim of sulphuric acid, drained, allowed to lie for 15 minutes, and then washed to remove the soft gelatine. In all cases in which the

areas are deposited on an etching resist, the plate is treated to a solvent for the resist after treatment by one of the above methods and then etched. When the areas are deposited directly on the plate they are burnt into the plate to form an enamel before etching.

119032

N. Stefani 2155

**Photographic Cameras.** In a film camera for taking two or more photographs from one view point which are afterwards united to form one panoramic picture, the surface of the film in the exposure position is curved to constitute part of a cylinder having its axis passing through the lens. The camera is also turned about this axis between the exposures.

119033

N. Stefani 219—084

**Photographic Cameras.** In a photographic camera, a cross formed by metal strips intersecting on the optic axis of the lens is provided in front of the sensitive surface so that the center of the picture is automatically indicated.

118743

P. H. Waddell 257

**Washing Photographic Prints.** A basin for use in washing photographic prints, etc., is provided with a number of water-inlet pipes leading from a multiple-way cock, the plug of which is automatically rotated in such a manner that water is discharged successively through the various inlet pipes into different parts of the basin.

119245

J. P. Hansen 2658-2659

**Photographic Cameras.** Cameras for use with film or plates contained in envelopes which have projecting lower edges are provided with means engaging the projecting edge in such a manner that the shutter of the envelope may be easily withdrawn.

119246

J. P. Hansen 2658-252

**Trays, Dishes and Containers for Daylight Developing, etc.** A Tank for Daylight Treatment of Films and Plates in separate envelopes.

118904

F. C. Hamilton 3203

**Cinematograph Apparatus.** In cinematograph shutters having non-opaque blades with refracting surfaces, the blades are formed on one side with grooves having flat bottoms and perpendicular sides, and on the other side with ripples and waves which extend in the same general direction as the grooves.

118881

A. H. Marshall 3209

**Cinematograph Apparatus.** Relates to safety shutters for use in cinematograph apparatus, of the kind in which, when the film breaks or runs out, the shutter falls and cuts off the light and at the same time breaks the circuit of the driving-motor and stops the machine.

## German Patents

304794

A. G. Mimosa B13

Photographic Papers and Photographs. The back of the paper is coated with a colored layer, and the paper itself may be treated with a transparent lake.

302279

Ges. f. Ang. Phot. Freiburg P1

Recovery of silver from photographic solutions by precipitation through metal bodies in constant friction, characterized by the fact that the precipitating bodies are smooth and round, like balls or cylinders, and kept in constant friction.

302786

R. Kogel /9

Process for Making Positives characterized by the fact that the negative is printed on a layer containing sensitized diazo compounds and, if necessary, also a bleaching dyestuff. The exposure being made, the diazo image is transformed into an azo image by development. The new process yields direct positives and is much cheaper than processes using silver halides. The diazo compounds used for this process (see: DRP 88949, 89437, 171024, etc.) are very permanent and have the property of forming dyestuffs with amines, phenols, etc. The action of light destroys this property. (This would seem to be anticipated by the Primuline process.) (See also *Abstract Bulletin* for Sept., 1918, p. 162.)

# Monthly **ABSTRACT** Bulletin



February, 1919

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# Monthly Abstract Bulletin

Vol. 5, No. 2

February, 1919



*F. F. Brown,  
Belmont.*

## Errata

The Abstract Bulletin for January, 1919, was the first number of Volume V, and the paging of it should therefore have started with 1 instead of 227. In order to retain the uniformity of volumes, the paging of this, the February issue, starts at 27 and not at 217, the January number having contained twenty-six pages.

In the Abstract Bulletin for January, 1919, on page 234, line 27, instead of *N. Kleinstück*, read *M. Kleinstück*.

On page 235, line 28, instead of *ond*, read *and*, and instead of *K. Kirchhof*, read *F. Kirchhof*.

On page 236, line 11, instead of *M. Moeller*, read *W. Moeller*.

On page 240, line 14, instead of *rol*, read *roll*.

## Photography

**The Iodine Spirit Reducer** T. H. Greenall H1—1655  
*Amat. Phot.*, Nov. 27, 1918, p. 527

Further notes on the use of the reducer introduced by the writer and described in *Phot. Focus*, Nov. 14, 1917.

**The Ideal Negative** H. B. Romane G 031—1213  
*Studio Light*, Dec., 1918, p. 1

A reprint of an article from *American Photography*, Nov., 1918, in which the author praises Eastman portrait film.

**Chemical Fog** J. I. Crabtree G—041  
*Amer. Annual Phot.*, 1919, p. 20

Chemical fog is defined as the fog produced during development or fixation by undesirable chemical action. The amount of fog produced in any particular case depends on the following factors: The nature, age, and previous history of the emulsion, the nature of and impurities in the developer. The impurities may be either oxidation products formed during development, impurities in the chemicals used, or oxidation products formed while mixing the developer. Fog is most commonly caused by incorrect mixing, so that in order to insure a clean working developer the following rules of mixing should be observed: (a) Dissolve the preservative before adding the developing agent, (b) thoroughly dissolve the developing agent before adding the carbonate, (c) mix the developer as cold as possible. The effect of exposure and time of development on the amount of fog produced are discussed and methods of compensating for fog by adding a soluble bromide or iodide to the developer are indicated. The nature of dichroic fog is also explained and methods given for its prevention.

**High Temperature Development** R. Namias G5—055  
*Prog. Phot.*, Jan., 1918, p. 18

In the course of a review of J. I. Crabtree's paper on the subject (*Communication No. 62 from the Research Laboratory of the Eastman Kodak Company*), Professor Namias recommends the following fixing bath for high temperature work:

Hypo	-	-	250 grams
Sodium Acetate	-	25	"
Chrome Alum	-	7.5	"
Water to	-	-	1 liter

**Artatone** K. Tausig J136  
*Amer. Annual Phot.*, 1919, p. 146

Instructions for the manipulation of Artatone paper, which consists of hand-made Japanese tissue coated with emulsion on both sides.

**Blue Toning of Prints** R. Namias J82  
*Prog. Phot.*, Feb., 1918, p. 38

Prints may be toned blue in the following bath:

Ferric alum	-	-	3 grams
Citric Acid	-	-	0.5 "
Water to	-	-	1 liter

Before use add 10 ccs. of 10% potassium ferricyanide. The process of toning intensifies the print so that the nature of the black and white print should be adjusted accordingly. The vivid blue-green color of the toned prints may be modified by bathing in a 1% solution of hydrochloric acid, washing and developing with amidol in daylight. The action of the hydrochloric acid is to convert the silver ferrocyanide image formed during toning into silver chloride, and this is changed back to silver in the redevelopment. It is claimed that this method avoids the double tone produced by toning in the first place with a weaker toning solution.

A New Photographic Mordant Dye Process F. E. Ives J88  
*Mot. Pict. News*, Dec., 1918, p. 3941,  
*J. Frank. Inst.*, Dec., 1918, p. 755

The compound formed by bleaching a silver image in a solution consisting of 1 oz. each of potassium ferricyanide and chromic acid in 1 gal. of water will mordant certain basic dyes like saffranine, auramine, and malachite green. After bleaching it is necessary to wash out the free chromic acid and this is hastened by rinsing in water containing a little sodium bicarbonate. A feature of the dye images is their transparency so that they do not require fixing out. (The compound formed in the above reaction is probably silver ferricyanide and its preparation has been indicated by Bullock, U. S. patent 1,279,248. Bullock used either a mixture of ferricyanide and potassium permanganate, or ferricyanide and chromic acid. The compound formed by bleaching a silver image in either of these mixtures will mordant basic dyes.)

K43

The Colorograph Laboratory, Inc., New Rochelle, N. Y., announces in the January issue of the *Motion Picture News* that they are sole licensees under the Hernandez Mejia patents for the production of two-color subtractive pictures on double coated motion picture film. Releases at six cents a foot are to be issued.

Decennia Practica—Color Photography K/51  
*B. J. Col. Sup.*, 1918, p. 47

Interference processes.

The Photography of Metals with the X-Rays T. T. Baker X0945  
*B. J.*, 1918, p. 535

Describes the use of x-rays of very high voltage obtained by the use of the Coolidge tube for radio-metallography. The metal to be examined is surrounded with a lead shield and a voltage of about 100,000 to 250,000 with 2 to 4 milliamperes is used. A flaw  $\frac{1}{8}$  of an inch in diameter can be detected in a block of steel 2 inches thick.

The Fundamentals of Photography. C. E. K. Mees 015  
 Chapter X, The Technically  
 Perfect Negative  
*Kodakery*, Jan., 1919, p. 18

A technically perfect negative is defined as one in which the opacities of the different gradations are exactly proportional to the light reflected by those portions of the original subject which they represent.

Chemical Poisoning J. I. Crabtree  
*B. J.*, 1918, p. 563

A letter from the Research Laboratory dealing with this subject.

- The Use of the Interferometer for Testing Optical Systems : F. Twyman 019

B. J., 1918, pp. 556, 567

This, the twenty-first Traill-Taylor memorial lecture, deals with the prism and lens interferometers designed by the author. Adopts Rayleigh's criterion that an optical element cannot properly be described as of first quality if it produces aberrations greater than  $\frac{1}{4}$  wave-length. Tests of a single lens, of which illustrations are given, show that the aberrations on the axial pencil are  $2\frac{1}{4}$  wave-lengths, and it can be assumed therefore that photographic lenses do not at present conform to the criterion given. A special form of the lens interferometer has been designed for the testing of camera lenses.

- Pressure Marks on Photo Plates : M. Luckiesh 041  
Scientific Amer., Jan., 1919, p. 29

The author describes certain peculiar markings of very minute dimensions which he observes on a certain particular brand of panchromatic plates. At first these were attributed to ionization effects but further exhaustive tests made on perfectly fresh plates of the same kind indicated that these markings were due to pressure. The author concludes that these particular markings were due to fine dust particles which has been rubbed into or across the surface of the plates. Microscopic photographs illustrating the markings are given.

- Enlarged Negatives 046

B. J., 1918, p. 566

A general article on the subject.

- The Function of the Condenser in Projection Apparatus : H. Kellner 019

Mot. Pict. News, Dec., 1918, pp. 3752, 3936, and Jan., 1919, p. 130

- Substitution of Potassium Carbonate in Developer : R. Namias 1533—163

Prog. Phot., Feb., 1918, p. 34

Sodium carbonate containing 14% caustic soda is recommended as a substitute for potassium carbonate in a developer formula.

- Dyes in Color Photography 158

B. J. Col. Sup., 1918, p. 46

Translation of a paper by Dr. Seyewetz from "Chimie et Industrie." After a discussion of the dyes used in the three-color processes the leuco bases used in the Pinachrome process are described, the di-azo dyes of Feertype, and the bleach-out process.

- The Bromo-Pigment Type : R. Namias /87

Prog. Phot., Jan., 1918, p. 1

A description of the well known Powder process.

- The Gum Bichromate Process With a New Colloid : H. S. Starnes /88

B. J., 1918, p. 540

Mr. Starnes demonstrated at the Royal Photographic Society the use of gum senegal instead of gum arabic for the gum bichromate process.

## View Finders

A. Lockett 264

Amer. Annual Phot., 1919, p. 78

A discussion of the relative merits of the brilliant, the prismatic-direct-vision, and the wire-frame-direct-vision types of view finders.

## Photo-Engraving

## Union Engravers Make Prices

American Printer, Dec. 5, 1918, p. 51

New York Union has issued a scale of minimum selling prices for photoengravings, threatening to withdraw their workmen from houses selling below these prices.

## The Guild Principle in Photoengraving

J. A. Fitch

Inland Printer, Jan., 1919, p. 412

An account of the method by which the New York Union of Photoengravers has fixed the selling prices.

## Need of Standardization of Color Terms

E. E. Andrews

Inland Printer, Jan., 1919, p. 409

No. 19 of a series of articles defining color terms according to the system of the late A. H. Munsell.

## Offset Press Photo-prints

S. H. Horgan

Inland Printer, Jan., 1919, p. 411

Method of making prints on to metal for photolithographers.

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## Physics

The Physical Characteristics of X-Ray Fluorescent  
Intensifying Screens

M. B. Hodgson

Phys. Rev., Dec., 1918, p. 431

The conditions governing the efficiency of intensifying screens for use with various photographic materials are outlined. Photographs showing the fluorescent spectra of calcium tungstate excited by rays of various qualities are given. It is also shown that the characteristic radiation from various metals may be used as a means of intensification in x-ray photography.

On Fundamental Frequencies  
in the Spectra of Various Elements

J. C. McLennan and H. T. C. Ireton

Phil. Mag., Dec., 1918, p. 461

It has been shown that when the vapors of mercury, zinc, cadmium and magnesium are subject to bombardment by electrons whose velocities are gradually increased, these vapors are stimulated to the emission of a monochromatic radiation. The present paper is a study along these lines.

The Light Scattered by Gases: Its Polarization  
and Intensity

R. J. Strutt

Proc. Roy. Soc., Nov., 1918, p. 155

The writer has already shown that light scattered by gases in the direction perpendicular to the beam is almost completely polarized. As the sky light is not due to the scattering of light all incident in one direction, the question arises whether or not the polarization of scattered light at right angles to the beam is absolutely complete. The present work shows that the polarization is not complete, the vibrations parallel to the incident light being a percentage, depending on the gas, of the intensity in the perpendicular direction. Helium polarizes far less perfectly than any other gas. The theoretical "spherical" atom or molecule would give perfect polarization.

Eye Protection in Iron Welding Operations

W. S. Andrews

Gen. Elec. Rev., Dec., 1918, p. 961

Description of various materials used in goggles and protective glasses. Data on their absorption of infra-red and ultra-violet radiation.

Studio Electric Lamp Frame

Elec. Merchandising, Dec., 1918, p. 273

Details of construction of lamp frame for use in studio work. Five one thousand watt lamps are mounted on portable frame and provided with suitable diffusing screens and reflectors.

Smithsonian "Solar Constant" Expedition to Calama, Chile

Science, Dec. 27, 1918, p. 635

Description of the station, instruments and methods used for the determination of the solar constant. The average value so far obtained at this station is 1.951 calories per square centimeter per minute.

The Properties and Testing of Optical Instruments

Circ. Bur. Stand., No. 27

Optical instruments are divided into three classes: Instruments on observation, instruments for reproduction and instruments for measurements. The main features of optical instruments are outlined. The causes and corrections of various imperfections are given and methods of testing sketched.

The 100-inch Reflecting Telescope of the  
Mt. Wilson Solar Observatory

H. S. Jones

Science Progress, Oct., 1918, p. 243

An interesting description of the world's greatest telescope, and an account of its construction. The glass disk from which the mirror was made is 101 inches in diameter, 13 inches thick and weighs  $4\frac{1}{2}$  tons. The focal length is 42 feet. The figuring is so perfect that the largest zonal error in focus is only 0.14 mm. The total weight of the telescope is 100 tons. No results of observation with this remarkable instrument are as yet forthcoming.

On the Light Emitted from a Random Distribution  
of Luminous Sources

Rayleigh

Phil. Mag., Dec., 1918, p. 429

The investigation is on sound waves, but the results are equally applicable to electromagnetic or light waves. A mathematical investigation difficult to summarize.

On the Ultra-Violet Spectra of Magnesium and Selenium

J. C. McLennan and J. F. T. Young

Phil. Mag., Dec., 1918, p. 450

Many new lines have been discovered by the authors in their study of the spectra of magnesium and selenium. The authors propose to extend their study to slightly below 600 A. U. by means of a newly designed grating spectrograph.

Arc and Spark Spectra and the Periodic System

I. W. D. Hackh

Astrophys. J., Nov., 1918, p. 241

The periodic system of the elements is reviewed, various schematic arrangements being considered. In the second part of the paper the author tabulates the number and intensity of the arc and spark spectra of all the elements. He finds the number and intensity to be reciprocal, and that the number of lines is inversely proportional to the E. M. F. of the elements. The spectral lines are explained by supposing that atoms are divided into species, each species emitting homogeneous radiation.

Correction of Optical Surfaces

F. Twyman

Astrophys. J., Nov., 1918, p. 256

An answer to a criticism of Michaelson's on a limitation of the author's method of correcting optical surfaces. The author considers his method probably superior inasmuch as it allows the interference pattern of the entire surface under test to be seen at a glance, which is not the case with Michaelson method. Various set-ups are given, depending on the character of the system to be tested. Ten of these instruments are in constant use at the Hilger plant.

## Photochemistry

The Fluorescent Properties of Cellulose

S. J. Lewis

Paper, Nov. 13, 1918, p. 15

The general results show that the power and distribution of the fluorescent properties are definite functions of the chemical constitution and their variations conform to what is known of the influence of substituent groups on the properties of the original substance. Ground wood lacks fluorescent properties also the cellulose nitrates are nearly inactive. Cellulose acetates generally show a much stronger fluorescence.

The Fastness of Dyestuffs to Light  
and Ultra-violet Exposure

E. W. Pierce

Color Trade J., 1918, 3, p. 267

The author discusses the numerous elements which render difficult an established standard method of dye testing to light. The ultra-violet lamp eliminates some of the objections of sunlight, but as yet there are many problems to be worked out before the method is entirely satisfactory. In general, one hour of exposure to the ultra-violet lamp at eighteen inches from sample is equal to eight hours of sunlight under normal conditions.

## Colloid Chemistry

Notes on the Analysis of Celluloid. Applications  
of Cryoscopy to the Quantitative Determination  
of Camphor in Cellulose

A. Herve

Le Caoutchouc et La Gutta Percha, 1918, p. 9601

It is pointed out that the extraction method gives somewhat erroneous values, owing to retention of liquid solvents by nitro-cellulose. More exact values can be obtained by determining the depression of freezing point of pure benzene.

Advantages and Inconveniences of Different  
Varieties of Celluloid

A. Colassi

Le Caoutchouc et La Gutta Percha, 1918, p. 9604

Stabilization of Celluloid (cont.)

A. Colassi

Le Caoutchouc et La Gutta Percha, 1918, p. 9604

Refers to solubility differences of nitro-celluloses and to stabilization by pulping and hot water washing.

Process for Preparation of New Cellulose Esters

Le Caoutchouc et La Gutta Percha, 1918, p. 9605

Use of methylene sulphate as catalyst in the acetylation of cellulose, also with formic acid and other homologues.

The Viscosity of Rubber Solutions

Le Caoutchouc et La Gutta Percha, 1918, pp. 9612, 9619

A valuable review from the Delft Laboratory for India rubber research on the determination of viscosity of rubber solutions and its relations to other properties. As with other emulsoid colloids, a definite relation exists between the viscosity of the sols and the mechanical strength of the gels or skins, etc., formed therefrom.

Adsorption of Hydrochloric Acid by Hide-powder

V. Kubela

Koll. Zeits., 1918, 23, p. 57

It seems probable that the first portions of acid which are removed from solution combine with the hide-powder to form a definite compound. This compound appears to contain about 977 grams of hide-powder per gram-molecule of hydrogen chloride. This number agrees fairly closely with those which have been previously obtained for the molecular weight of gelatine. The further removal of hydrogen chloride from solution takes place in agreement with the usual adsorption formula.

## Organic Chemistry

Solvents from Kelp C. A. Higgins 1516

J. Ind. Eng. Chem., Oct., 1918, p. 858

An account of the admirable work of the San Diego plant of the Hercules Powder Company. By the fermentation of kelp not only potash and iodine, but acetic acid, acetic anhydride, ethyl acetate and acetone are produced in considerable quantities, while the homologues of these substances are obtained as valuable by-products. The value of ethyl propionate and ethyl butyrate as solvents for nitrocellulose is emphasized.

Photographic Sensitizing Dyes L. E. Wise and E. Q. Adams 1581

J. Ind. Eng. Chem., Oct., 1918, p. 801

A summary of work done in the Bureau of Chemistry upon the synthesis and absorption spectra of isocyanine and allied dyes. No experimental details are given. A series of formulae is shown, purporting to indicate the mechanism of the isocyanine condensation, but no reasoning for the views extended is offered and the work of Kaufmann and his collaborators is apparently entirely ignored. A structural formula for pinacyanol is put forward which not only cannot possibly be applied to pinacyanol itself but is that of a cyanine.

Researches in Chemical Wood-pulp C. G. Schwalbe

Paper, Nov. 20, 1918, p. 11 and Nov. 27, 1918, p. 11

An important discussion of the various methods and tests for furfural and lignin. Tables are given showing results of other tests upon different pulps.

## From Eastman Kodak Research Laboratory

Examination of Organic Developing Agents H. T. Clarke

J. Ind. Eng. Chem., 1918, p. 891

Communication No. 73

A scheme by which commoner organic developing agents can be classified and identified by means of their solubility in water, ether and alcohol, and a series of tests by means of which individual members of these classes can be distinguished. Quantitative estimation of certain developing agents is also discussed and a few typical analyses of developing agents on the market are quoted.

Enlargements on Artura Carbon Black Using Mercury "M"

Tube as Light Source

Report No. 597

When using the mercury lamp for enlarging, the relative positions of the light source, opal diffusing screen, and negative can be varied considerably. Ordinarily the opal is set into the camera back approximately one inch from the negative. The light source may be placed as close as  $2\frac{1}{4}$  inches to the opal or be moved as far back as desired.

Trial enlargements were made on Artura at  $2\frac{1}{4}$  and 12 inch separation. Prints were developed in Nepera 1-4 at 70° F., for 2 minutes. The prints showed no appreciable difference in contrast.

The exposure necessary was, as expected, considerably greater with the large separation than with the small. In one pair of exposures the  $2\frac{1}{4}$  inch separation required only 10 seconds against one minute for the 12-inch separation. Repeated trials at different distances proved that the only difference produced was in the exposure required.

Other trials were made with the opal attached to the lamp house immediately in front of the M tube instead of in the camera back. The prints again showed no difference in contrast regardless of the distance the lamp was placed from the negative. With this arrangement the exposure did not greatly alter with the separation.

A comparison was finally made between prints made with a nitrogen tungsten lamp and the Mercury M tube using in both cases a diffusing screen of flashed opal. Again no perceptible difference in contrast could be noted.

## Patent Abstracts

### U. S. Patents

1284869 P. D. Brewster. K/43 K3117  
Assigned to Brewster Film Corporation

A Camera for taking different color impression negatives upon the opposite sides of a double coated film. The mirrors by which the paths of images are determined are adjustable to permit of their proper registration.

1283815 E. A. Lamphier 066

An Optical Instrument for viewing motion picture exhibitions from the front seats of the auditorium. It comprises a special pair of spectacles which is in effect an inverted opera glass. The image on the screen thus seems further away and can be conveniently viewed from a short distance.

1284084 A. R. Flint 066

A Setting for Motion Picture Screens designed to give the illusion of depth. It comprises a tapered proscenium before the screen, this being suitably elongated.

1285857 L. T. Welch. Assigned  $\frac{1}{2}$  to John C. Mammoser 067

Motion Picture Apparatus in which there is thrown upon the screen simultaneously with the play a synopsis of the same, which is gradually uncovered as the play proceeds, so that late arrivals may get a brief sketch of the story already shown.

1283394 A. E. Bawtree. Assigned  $\frac{1}{5}$  to Sydney E. Page 089

A Photographic Type-Composing Machine comprising an annular negative member, which is turned to bring the desired character in position. Means is provided for varying the degree of enlargement automatically, so that the copy may be set up in types of different sizes from the single negative disk.

1282829 A. Hernandez-Mejia 1212-063.

A Method of Making Pictures or Titles with a bas-relief effect. It consists of making a negative, then making a positive from the negative and in printing from both of these upon the opposite sides of the double coated film, the images being somewhat out of registration. A heightened relief effect is thus obtained.

1280981 J. D. Flack 1512

Apparatus for Drowning, Washing and Conveying Nitrated Cellulose, consists of a flume or trough running between set of nitrating centrifugals and into which the charges are unloaded. Discharged cotton is carried down the trough above a false bottom, the water being kept in motion by a suitably placed paddle wheel, and re-circulated below the false bottom.

1283604 F. S. Vogt 2152

A Double Exposure Prevention Device of the type in which the shutter is locked after actuation and is unlocked when the film roll is turned to bring another exposure area into position.

1284379 E. Leschbrandt 2153

A Camera in which means is provided for light-printing upon the edge of a roll film. A character-carrying disk is mounted above the path of the film. At intervals

along the film the protective paper backing has an elongated aperture. The disk is positioned to bring a desired character before a printing opening and then a button is pressed which actuates the shutter to light-print the desired character and further actuates the take-up roll to move the film slightly, whereupon another character may be printed.

1284582 S. D. Bumgardner 2153

Photographic Film having identification data on the film, upon the backing paper and also upon separate tabs which may be attached to each exposure portion of the film, so that they may be more easily identified.

1283172 J. F. Haworth 219—083

A Panoramic Camera said to be designed for aerial work in which means is provided for light-printing on the edge of each exposure the time, a compass reading and a barometer reading.

1280862 S. Satow 1514

Celluloid-like Substance and Process of Making Same. Production of plastic masses, similar to galalith, by action of hydrolysing and condensing agents on vegetable proteins.

1283408 J. F. Haworth 219—083

A Framework for use in Panoramic Cameras to prevent the film being shaken out of focal position by reason of jarring. The frame is placed in front of the film and hence causes lines to appear on the negative. As the camera is said to be for use in aerial work, these lines may be of use in subdividing the picture for purposes of study.

1285906 G. C. Beidler 2193

A Developing Apparatus comprising means for attachment to a camera in which the paper or film is cut off after exposure and submerged in a developing bath. Oscillating submerging means of a peculiar type is shown and claimed.

1284545 C. W. Allan 222

An Enlarging Apparatus in which a camera of ordinary construction is mounted upon a dark box in which the sensitive paper is exposed, the negative being held in a frame adjustably positioned in front of the camera.

1284507 C. A. Watson

A Photographic Printing Machine in which there is an adjustable mask and means for clamping the negative. The clamps for the negative act as stops for centering the position of the printing paper, which is held in place by a temporary acting clamp operated by a pedal.

1285288 N. S. McEwen 2626

A Camera Timing Device in which a mechanism carrying a weight is attached to the shutter trip. The position of the weight is gradually changed, being moved away from the trip. When it reaches a certain position, it will exert a sufficient leverage to actuate the trip. By adjusting its speed of movement and its position, the time of actuation may be predetermined.

1282839 C. E. Hutchings. Assigned to E. K. Co. 264

A Folding View Finder of the reflecting type in which the ground glass screen is pivoted to the top of the front of the finder, and the screen and mirror are folded into upright position when the lens front is pushed into the camera body.

1283633 J. Becker. Assigned to E. K. Co. 264

A Direct Vision View Finder in which the lens is sunk in an inclined setting opening on top of the camera. An adjustable sight is mounted in the rear of this lens.

1285364 F. A. G. Pirwitz 264

A View Finder in which the mask element is on the front lens instead of on top, as in the usual finder. The mask is transparent, so that the entire field of the lens is visible to the user. When the finder is turned, it is not necessary to make any movement in the mask.

1283963 B. M. Takahashi 2668

A Lens Attachment for Cameras comprising a cap with two hinged covers. The first when opened acts as a hood; the second holds a Ray filter in place.

1284744 G. M. Milner 2682

An Exposure Meter in which the light reflected from a mirror through a color screen is compared with a graduated scale. The comparing means is adjustable and gives by direct reading the correct exposure for different stops.

1283565 F. C. Taylor. Assigned to F. McCann 3201

An Improvement in the Mechanism of Motion Picture Machines of the Geneva gear type.

1284371 H. A. Larsen and A. C. Roebuck. 3201

Assigned to The Enterprise Optical Mfg. Co.

A Loop Setter for Motion Picture Machines by means of which the loops above and below the gate may be adjusted manually.

1284598 C. J. Coberly. 3201

Assigned to Motion Picture Apparatus Co., Inc.

A Mechanical Movement for imparting intermittent motion to motion picture film. It is of the type in which the film is gripped and moved forward, then released.

1284653 H. Graf. Assigned to American Co. 3204

A Reel for Motion Picture Films in which a double clip is attached to the core portion to permit of the insertion of the end of a film from either side.

1284448 N. Power. Assigned to Nicholas Power Co. 3208

A Tension Device for Reels from which motion picture film is being unwound. Should slack accumulate from overwinding the reel, a brake is applied to its axle, slowing up its speed until the film is under proper tension again, when the brake is released.

1284499 R. E. B. Wakefield. Assigned  $\frac{1}{2}$  to Donald U. Rich 3208

An Adjustable Take-up for Motion Picture Reels. As the film is wound upon the take-up reel the increased weight of the reel causes it to compress a spring and be slightly lowered. Coaxial with the reel is a disk which is frictionally driven and the lowering of the axis increases the speed of the reel; hence the tension on the film is rendered more constant.

1283577 C. M. Sloman 322

A Motion Picture Machine of the type in which the film moves at a constant speed. An oscillating mirror is so mounted that it reflects through the lens the light projected through the picture in such a way as to keep the projection constant while the mirror moves in one direction. A shutter intervenes while the mirror returns.

1283224 L. B. Larsen. O. J. Holmes and H. G. Larsen. 325

Assigned to Acme Motion Picture Projector Co.

A Portable Motion Picture Machine in which the light is furnished by an incandescent filament lamp. The patent covers practically the lamp box structure and its relation to the other compact mechanism of the machine.

1284673 J. Henley 326—068

A Means for Viewing Motion Pictures of the Stereoscopic type in which alternate pictures represent impressions taken through different lenses. Each person looking at the pictures has a viewing mechanism in which the vision of the two eyes is alternately dimmed, the mechanism being electrically controlled to correspond with the projection of the pictures upon the screen.

1283676 D. F. Comstock and O. E. Conklin. 363

Assigned to Kalnus, Comstock & Wescott, Inc.

An Optical System for neutralizing the keystone distortion caused by projecting pictures upon a vertical screen from an elevated position. The system comprises a negative toric lens and a positive spherical lens. The resulting projection is said to be anastigmatic as well as free from keystone distortion.

1281841 M. S. Rosenfeld. Assigned to J. Schechter 387

Apparatus for Cleaning Motion Picture Film in which the film is passed beneath a roller in a vessel containing the cleaning fluid and is then burnished.

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## British Patents

119854 Hess-Ives Corporation K/43

Color Photography. In the production of multi-colored photographs or cinematograph films, two colored images are produced by exposure, etc., on opposite sides of a colloid layer supported on a base, or on colloid layers on opposite sides of a base; one image may be a copper-toned silver image or a copper-toned and mordant-dyed silver image, and the other image may be a cyanotype image. The first image may be printed on to a colloid layer sensitized with a silver haloid, and through the base supporting it, from a green-representing negative, and after development, etc., of the image, the colloid layer may be resensitized in a 2 per cent bath of green citrate of iron and ammonia, blotted off, and dried. The other surface of the layer is then exposed under a red-representing negative and the image is developed with a 1 per cent solution of potassium ferricyanide, the two images being confined largely to their respective sides of the colloid layer. The silver image is next converted into a red pigment image by means of a copper-toning bath and may be fixed with sodium thiosulfate, or the toning may be performed before the second sensitizing. The color of the red image may be modified or intensified by treatment with a basic dye such as fuchsine or auramine, which is mordanted by the copper image, and the color of the cyanotype image may be modified by the addition of a reagent such as potassium per-

manganate to the developer, or by treatment after development with a dilute, slightly acid, solution of potassium bichromate. A third colored image may be combined with images prepared as above set forth.

119556

L. Sawyer 0649

Cinematograph, etc., Films. A cinematograph, or like, film representing a scene subject is arranged to display in the body of the scene words or sentences, which are directly associated with and move with or follow the characters appearing to utter them. The appropriate positions of the words on the successive pictures are determined from the scene film by means of a measuring-screen divided into squares by vertical and horizontal lines. A film bearing words only is then produced by the use of a similar measuring-screen, and the word film and scene film are superposed to produce a single complete film.

119876

R. L. Watkins 0946

Photomicrography. A microscope and a moving-picture-taking apparatus are used in combination to obtain enlarged photographs in rapid succession of blood specimens and other subjects; a source of light and means for causing a light beam to impinge on the specimen and pass through the microscope on to a film in the taking apparatus may be provided. A microscope projects into a light-tight casing containing pay-out and take-up spools respectively for a film. The film is fed by sprockets and a beater, these features and a suitable shutter being adapted to be driven by a motor. A partition carries a sleeve, and the film passes between this sleeve and a collar carrying a focusing screen the diameter of which is preferably greater than the width of the film. The image on the screen may be viewed through a tube fitted with an eye-piece and containing a lens. The microscope is removable at will from the casing, and tubular members, carried respectively by the microscope and the partition, secure a light-tight connection. A mirror reflects a beam of light from an arc lamp through the microscope, etc.

119516

F. W. Mueller 2155

Panoramic Cameras. A panoramic camera for photographing the whole sweep of the horizon at a single exposure upon a continuous sensitive film comprises a cone-shaped film support and a rotatable lens having its optical centre in the axis of the cone and its optical axis at an angle thereto; the film may be carried in a removable film-holder so as to permit daylight loading.

119871

J. P. Hansen 2621

Photographic Shutters. Single or double flap shutters for cameras comprises flaps or plates having inwardly or outwardly projecting flanges co-operating with edges or recesses in the shutter frame. The frame has a projection co-operating with the flaps which are carried by rotating pins, and are formed with flanges. The flaps are fitted with felt lists and the flanges of one flap overlap the flanges of the other flap when closed. The pins are connected by a crossed cord and the shutter is closed by helical spring. The flanges fit closely to the co-operating parts so that an air cushion is formed on closing and so as to form a light-tight closure if the flaps are so adjusted as to stop at a short-distance from the frame. In a modification, the flap of a single-flap shutter is formed with inwardly projecting flanges on three sides, or, with outwardly projecting flanges co-operating with recesses in the frame. Shutter operating mechanism is shown in detail but not described.

119482

Lady S. Grant and L. A. Crickmore 329

Cinematographe. Apparatus for viewing cinematograph films.

# Monthly **ABSTRACT** Bulletin



March, 1919

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**EASTMAN KODAK COMPANY**  
Rochester, New York



*T. Franklin Cannon*

*Reimer +*

# Monthly Abstract Bulletin

Vol. 5, No. 3

March, 1919

## Errata

In the *Abstract Bulletin* for January, 1918, on page 231, line 36, instead of *Ivens*, read *Ivins*; and on line 37, instead of *p. 118*, read *p. 182*.

In the *Abstract Bulletin* for February, 1919, on page 35, line 2, instead of *A. Herve*, read *A. Hervé*; and on line 4, instead of *Cellulose*, read *Celluloid*.

## Note

Beginning with this number of the *Abstract Bulletin*, all photo-chemistry and photo-engraving will be included under the heading of Photography, the arrangement of the abstracts in the *Bulletin* according to the numerical classification being changed accordingly. This change has been made in order to keep photographic theory, color photography and photo-engraving all together, and will, at the same time put motion picture photography under the same head.

## Photography

### Fluorescence

J. Perrin

Ann. de Phys., 1918, 10, p. 133

This very interesting paper advances the theory that fluorescence of organic bodies is the consequence of an irreversible chemical change involving destruction of the fluorescent molecule. The chemical theory of fluorescence is supported by experiments with thin layers. A future paper is promised, developing a generalized photochemical theory for the whole of chemical dynamics.

### Photolysis and Electrolysis

E. Baur

Helvetica Chimica Acta, 1918, 1, p. 186

A development of Grotthus electro-chemical theory of light action. Photochemical change initiated by a photochemical polarization in the molecule. Applications of the theory to photographic sensitizing are made.

### Fastness of Colors to Light

G. A. Haley

J. Soc. Dyers Colorists, 1918, p. 201

The author draws attention to several errors and deficiencies in the method of A. Robson (see *Abst. Bull.* for Dec., 1918, p. 210) for standardizing fastness of dyes.

### History of Substances Sensitive to Light

Boruttau

Zeits. angew. Chem., 1918, p. A. 139

The discovery of the change of color of silver salts under the influence of light is stated to have been mentioned first by Konrad Gesner in 1565.

### Action of Light on Phototropic Crystals

F. Weigert

Zeits. Elektrochem., 1918, 24, p. 222

A study of B-tetrachloro-a-ketonaphthalene; in which case no effect, other than the characteristic color changes, on the crystallographic properties by light of short wave-length was found.

### Note on the Action of Moisture on the Sensitiveness of Photographic Plates

E. Cousin 015

Bull. Soc. Franç. Phot., Oct., 1918, p. 27

A number of experiments showing that the sensitiveness is diminished by the presence of moisture.

### On the Causes of Variation in the Watkins Factors for Different Developers

J. C. Kingdon 017

Phot. J., 1918, p. 270

The author describes experiments undertaken to ascertain whether variability of the rate of diffusion of different developers might be the cause of the difference of

Watkins factors shown by them. The method consisted in the use of test tubes filled with gelatine gel, a graduated strip of bromide paper being put in each tube to serve as an indicator. Little difference in the diffusion rate between different developers was found.

An interesting phenomenon observed was that as the developer penetrates a red line appears on the bromide paper, which seem to indicate a certain minimum concentration of developer. The conclusion reached by the author is that the variation of the Watkins factor is due to some difference in chemical activity and is not due to diffusion. He still considers, however, that the time of the first appearance is conditioned by the diffusion of the developer reaching the superficial layer of silver bromide grains in sufficient concentration to produce reduction and concludes that the Watkins factor is conditioned by the critical concentration necessary to produce this first visible reduction. Developers which can produce it with a low critical concentration have a high Watkins factor.

In the discussion, it was agreed that the color of the red band was probably due to colloidal silver or photo-halide. No reference was made to the published general theory of development or to the idea of reduction potential.

### Ghost Images or Flare

019

B. J., 1919, p. 45

In an editorial article it is stated that ghost images and flare, which are likely to occur with anastigmats, are largely due to the absence of hoods.

### Hints for Photographers from Motion Pictures

A. Lockett 019

B. J., 1918, p. 579

Attention is called to the excellent definition of cinematograph pictures, this being ascribed partly to the short focus of the taking lens, thus ensuring depth. At the same time, the cinematograph lens is of long focus compared with the size of picture so that the drawing is satisfactory.

### Decennia Practica—Color Photography

K/51 K/56

B. J. Col. Sup., 1919, p. 3

The Lippmann or Interference Process. Pseudo Color Processes.

### Reproducing Pictures on Metal in Colors

K07

American Printer, Jan. 20, 1919, p. 45

A photoengraver named Artesani is said to have perfected a process of photographing in colors on metal. The details given, however, are meager, and the method of preparation of the dyes for the metal which is said to be the important part of the process is kept secret.

### Practicus in the Studio

F5—031

B. J., 1919, p. 49

Studio Exposures. Discusses the determination of exposure in the studio and especially the arranging of experiments and meter tests in order to get accurate exposure, on the importance of which great stress is laid.

Easy Conversion of Metric Formulæ

G1

B. J., 1919, p. 5

A simple rule for converting formulæ given in grams per liter to the avoirdupois system, is to take the quantity of 16 ounces as equivalent to 1000 cc. and multiply all the gram quantities by 7, which gives the number of grains per 16 ounces of solution equivalent to grams per liter. (Owing to the difference in size between the British and the U. S. fluid ounce, the result is about 4% too low in this country.)

Development of Under-exposed Plates

G5

B. J., 1919, p. 9

For under-exposure it is recommended that after development for the usual time the developer should be diluted with six times its own bulk of water and the plate left for an hour and a half and then transferred to a dish of plain water and left over night. This produces a negative which, while pyro stained, is of good printing quality and shows no tendency to grain.

Over-printed Self-toning Paper

J1—1355

B. J., 1919, p. 21

Some prints on self-toning paper which were over-printed were saved by placing in a saturated solution of salt before fixing. This gave prints of good quality and of a cold black tone similar to platinum-toned P. O. P.

Carbon Printing by Artificial Light

S. S. Richardson J2/82

B. J., 1919, p. 35

Carbon prints can be printed from the glass side of the negative by using a very small source of light such as the "Point-o-lite" lamp or the iron arc. The exposure for the Point-o-lite lamp is 40 to 50 minutes with the lamp at 20 cms., and with the iron arc at 50 cms. the exposure is 20 minutes.

Red Tones on P. O. P.

J81

B. J., 1919, p. 2

These tones may be obtained by the use of a toning bath containing phosphate of soda. Instructions are given.

Intensified Toning

T. H. Greenall J81

Amat. Phot., Jan., 1919, p. 27

A method of producing on bromide paper Bartolozzi Red prints of great intensity by a modified copper toning bath.

Practicus in the Studio—A Talk about Lighting

0314

B. J., 1919, p. 3

A general article on the subject.

Practicus in the Studio—Managing the Sitter

0314

B. J., 1919, p. 23

General article on the handling of sitters, and especially on the best method of dealing with children.

- Practicus in the Studio—Backgrounds 0314  
B. J., 1919, p. 36

- Photographing Cut Glass Ware 032  
Process Engrav., Dec., 1918, p. 186

Recommended to place glass in a box without back or front lined with black velvet and stood before a white background. Some of the facets will reflect the black velvet and others reflect the white light so that an appearance of real glass is afforded.

- Utilitarian Stereophotography 043  
B. J., 1919, p. 22

Editorial article on the use of stereoscopic photographs in various branches of science and industry. Stress is laid on the importance of suiting the separation to the working distance, and it is suggested that the best results in many cases are obtained by moving the camera rather than by using a two-lens camera.

- Personal Practice in Lantern-Slide Making J. D. Johnston 045  
Phot. J., 1918, p. 281

A description of Johnston's lantern slide methods in which he uses the formulæ originally introduced by Wratten and Wainwright, including the thiocarbamide formula which was afterwards discarded by them.

- How to Work with Color Sensitive Plates A. J. Bull 0561—2661  
Phot. J., 1918, p. 266

This brief report deals chiefly with the question of filters, a formula being given for a filter made from Filter Yellow A.

- What Panchromatic Plates Will Do 0561  
B. J., 1918, p. 579

General article on the advantages of panchromatic plates.

- The Patent Office Library 081  
B. J., 1919, p. 1

The Patent Office Library has now arranged to supply photostat copies of any document in the Library.

- The Photographic Lorry and Motor Truck Corp. W. F. Siegel 083  
Amer. Photo-Engraver, Jan., 1919, p. 44

A description of the work of the Army photographer.

- Photography as War Work 083  
B. J., 1919, p. 39

Article reprinted from the Daily Telegraph dealing with the aerial photography of the British Army. During 1918 a quarter of a million negatives were taken over German territory and nearly six million prints were made.

Aero-Photography and Town Planning 084

B. J., 1919, p. 18

A correspondent states that the Air Ministry has agreed to a photographic survey of Derby for use in new town planning scheme.

Wratten M Filters 094

B. J., 1919, p. 18

The Wratten Division of Kodak Limited have issued a new booklet entitled "Notes on Wratten M Filters" to replace temporarily their booklet on photomicrography, which is now out of print.

The Gum Bichromate Process with a New Colloid H. S. Starnes /88

Phot. J., 1918, p. 287

To get the best results the author finds it necessary to coat the paper so thinly that one minim of the solution will cover four square inches of surface. For development he uses water delivered from a small nozzle so that the force of the abrasion can be controlled by varying the water supply. Gum arabic is an unsatisfactory colloid since samples vary very much in properties and gum senegal is found considerably better, being softer and less brittle. It was found that with some samples the gum became insoluble soon after the bichromate was added; then on exposure to light it became soluble again, and after it reached that stage it insolubilized normally on continued exposure.

1375

At the Royal Photographic Society a demonstration was given by Messrs. Kent and Middleton on "Kerotype" paper, which is a bromide paper made by coating a waxed paper base with a special substratum.

B. J., 1919, p. 16

Practicus in the Studio—The Camera and Lens 211

B. J., 1919, p. 11

Contains remarks on the various fittings and suggestions for securing the most practical outfit. American stands containing racks on either side, one for exposed and the other for unexposed plate holders, are endorsed, as is the use of single slides in the place of repeating backs.

Some Notes on Print-Meters 2683

B. J., 1919, p. 46

A discussion of the various forms of print-meters which have been suggested. It is stated that in one trade printing concern the extreme variation in the rate of contact printing ranged from three minutes to twenty hours, the negatives being exposed to the same light and each negative affording good prints.

Training Returned Soldiers in Photo-Engraving 07

Amer. Photo-Engrav., Jan., 1919, p. 41

A discussion of the problem by M. Woll, S. H. Horgan and A. J. Newton.

- Caring for Engravings** F. Lovett 07  
 American Printer, Jan. 5, 1919, p. 33  
 Suggestions as to the proper filing and indexing of engravings.
- Intaglio Process of Printing** 0713  
 Plate Makers' Criterion, Feb., 1919, p. 41  
 A brief description of modern Rotary photogravure.
- The Negative, Transfers, and Inks Used in Photo-Lithography** J. A. Horgan 0722  
 Printing Art, Jan., 1919, p. 357  
 A series of notes giving some practical hints.
- Negatives for Photo-Lithography** W. J. Smith 07222  
 B. J., 1919, p. 39  
 A detailed article giving directions for best way to make negatives for planographic work of all kinds.
- Photographic Materials and Processes**  
 B. J., 1919, pp. 13, 27  
 A second annual report on progress in photographic manufacture which has been issued by the Society of Chemical Industry. The author is Mr. B. V. Storr of the Ilford Company, and the report covers the year 1917.
- Co-operative Plate Works, Ltd.**  
 B. J., 1919, p. 43  
 A resolution for the winding up of this company was passed on January 15.
- Bull. Soc. Franç. Phot., Oct., 1918**  
 This is the first number of the Bull. Soc. Franç. Phot. since 1917 and commences a new volume, the last volume covering the years 1914-1917. The deaths of a number of men eminent in the French photographic world are reported, notably M. Londe, who throughout all his life has been associated with medical photography; M. Mendel, the publisher of most French photographic work; M. Ch. Gravier, the well known editor of the *Moniteur de la Photographie*, who has published a great number of books and papers; M. E. Poulenc, the French manufacturer of photographic chemicals; and M. Dillaye, who has published many papers on the theory and practice of photography.  
 The Journal also publishes a number of honors conferred on its members in the Army, notably to Raymond Gaumont, who has been cited and granted the military medal, and M. L. P. Clerc, who was cited for his photographic work.
- Correction of Telescopic Objective** T. Smith  
 Phil. Mag., Nov., 1918, p. 405  
 A criticism of Allen's article on this subject as reported in Phil. Mag., June, 1918, and a defense of algebraic methods of lens computation and their equivalent tables which Allen had attacked.

The Infra-Red Arc Spectrum of Iron      H. M. Randall and E. F. Barker  
Astrophys J., Jan., 1919, p. 42

By means of a thermopile the region in the arc spectrum of iron lying between 9,000 and 15,000 A. U. has been explored and about fifty lines discovered and measured. The results are of value theoretically, on account of the large pressure shift of lines of long wave length such as are here dealt with. The technical difficulties in dealing with the iron arc are found to be very great.

Discussion of Some Evidence on the Origin of Radiation      A. S. King  
in the Tube-Resistance Furnace.  
Astrophys J., 1919, p. 48

A discussion of some results obtained by Hemsalech who notes that in the tube-resistance furnace spectrum of iron, the group near 4900 A. U. does not appear until the temperature has reached 2500° C. The writer finds that these lines appear at a much lower temperature. The origin of this high temperature type of radiation is in doubt—it may be thermal, electric or possibly chemical, and is accordingly of great theoretical importance.

The Infra-Red Arc Spectra of Cobalt,      H. M. Randall and E. F. Barker  
Nickel, Manganese and Chromium  
Astrophys J., Jan., 1919, p. 54

A continuation of the author's work on the infra-red spectrum of iron. The spectra of cobalt, nickel, manganese, and chromium have been explored with the thermopile from 1 $\mu$  to 3 $\mu$  and about twenty-five lines found in the spectrum of each. The results are of value in the study of series relation and of pressure shift.

The Photographic Study of Impact      C. V. Raman  
Phys. Rev., Dec., 1918, p. 442

The velocities of spheres before and after impact are observed photographically in order to show the relation between initial velocity and coefficient of restitution. In all cases this coefficient approaches unity as the velocity approaches zero.

On Haidinger's Rings in Mica      T. K. Chinmayanandam  
Proc. Roy. Soc., Jan., 1919, p. 176

An attempt at a fuller study of Haidinger's rings in mica.

Electrical Potential Gradient and Atmospheric Opacity      C. Chree  
at Kew Observatory  
Proc. Roy. Soc., Jan., 1919, p. 210

A paper containing the results of observation continued since 1892, on the visibility of objects and the potential gradient of the air.

Cunningham's Correction to Stokes' Law      I. Parankiewicz  
Phys. Zeits., 1918, 19, p. 280

Experiments with sulfur and selenium particles furnish what is claimed to be a new proof of the validity of Cunningham's correction to Stokes' law of resistance. (Sci. Abs. A., Dec., 1918, No. 1211).

## General and Inorganic Chemistry

Refractive Index and Solubilities      T. W. Richards and W. C. Shumb  
of the Nitrates of Lead Isotopes

Proc. Nat. Acad. Sci., Dec., 1918, p. 386

The refractive index of common lead nitrate at 20° was found to be 1.7815 and that of the uraniolead 1.7814. Atomic weights respectively 207.20 and 206.41. The molar solubilities of the two samples per 1000 grams of water are respectively 1.7993 for common lead nitrate and 1.7991 for uraniolead nitrate.

The Development of Crystals      R. Marcelin  
Ann. Phys., 1918, 10, p. 185

A microscopic study of the crystallization of p-toluidine shows that the crystals develop, not at the base, but at the surface by successive depositions. The layers of material which are deposited maintain a perfectly uniform thickness, which may be as small as three molecular diameters. Similarly, when a crystal dissolves, the change goes on at the surface, the material disappearing in successive layers, each layer maintaining a constant thickness, and it is found that the material has a crystalline structure at a thickness of only twenty molecular diameters.

The Reduction of Carbon Dioxide by Hydrogen      H. Wislicenus  
Peroxide

Ber. chem., 1918, p. 942

A series of experiments is described which shows that oxygen and formic acid are produced when carbonates are left with hydrogen peroxide, the best results being obtained with a saturated solution of potassium bicarbonate and a 10% solution of hydrogen peroxide.

The Replacement of Platinum      P. Nicolardot and J. Boudet  
in Apparatus for Electrolysis

Bull. Soc. chim., 1918, 23, p. 387

The authors recommend the use of an alloy of gold, silver and copper in the ratio 92 : 5 : 3, and coating the electrodes with a thin layer of platinum (5 mg. per sq. cm.).

The Purification by Sublimation      T. W. Richards and J. Sameshima  
and the Analysis of Gallium Chloride

Proc. Nat. Acad. Sci., Dec., 1918, p. 387

The method rests on fact that gallium trichloride sublimes and distills at a low temperature, whereas the other chlorides likely to be associated are much less volatile. Distillation and sublimation at first in a stream of chlorine and afterwards in a vacuum, of impure gallium chloride. See also J. Amer. Chem. Soc., 1918, (p. 1540).

The Purification of Gallium by Electrolysis and the Compressibility and Density of Gallium

T. W. Richards and S. Boyer

Proc. Nat. Acad. Sci., Dec., 1918, p. 388

Separating gallium from indium by means of different solubilities of the hydroxides in caustic alkali was tested without success. Better results were obtained by electrolytic method. Gallium occupies a place in the electrolytic series between indium and zinc. Gallium is less easy to deposit than indium, but easier to deposit than zinc. By carefully regulating the hydrogen-ion concentration and current density it was possible to deposit practically all of the indium with only a little gallium; and therefore most of the gallium could be separated in a slightly acid solution without the appearance of an important amount of zinc.

## Analytical Chemistry

The Estimation of Thiosulfates, Sulfites, Trithionates and Sulfates in a Mixture

C. Billeter and B. Wavre

Helvetica Chim. Acta, 1918, p. 174

The determination of sulfites involves the reaction between sodium sulfite and sodium disulfide ( $\text{Na}_2\text{S}_2$ ) whereby sodium thiosulfate and sodium monosulfide ( $\text{Na}_2\text{S}$ ) are formed; and the two alternative methods for trithionates involve respectively the union of sodium trithionate and sodium monosulfide to form sodium thiosulfate and the decomposition by heat of trithionic acid to sulfuric acid, sulfur dioxide and sulfur.

## Colloid Chemistry

Investigations on the Imbibition of Water by Gelatine

E. B. Shrerer

Sci. 48, 324-7 C. A 12, A

Imbibition depends on concentration of gelatine and also on its previous history in respect to concentration to which the gelatine was made up. A gelatine made by evaporation of a dilute solution of gelatine has greater imbibitory power than one made from a more concentrated solution cubes of gelatine immersed in water increase in their 3 dimensions to the surfaces from which most evaporation has occurred. Evaporation changes physical structure. (This article confirms results obtained in this laboratory and known in a general way for a long time.—F. A. E.)

Size of Submicroscopic Particles

G. Laski

Phys. Zeits., 1918, 19, p. 369

Deals with method of determining size of solid particles of dimensions of the wave-length of light by means of observations on the color of the scattered light. For sulfur particles from  $8 \times 10^{-6}$  cm. radius to  $18 \times 10^{-6}$  cm. radius the color ranges from purple through blue and green to yellow; particles of larger size give a yellow color like that of sulfur in mass. (Sci. Abs. A. Dec., 1918, No. 1209).

### Absorption of Light and Size of Particles in Disperse Systems

N. E. Pihlblad

J. Chem. Soc., 1918, p. ii. 418

Mainly an account of work previously published. Spectrophotometric observations of a silver hydrosol with very small particles show that the absorption increases towards the region of shorter wave-length, and that the maximum is not attained at 4000 Å. U.; with larger particles, the maximum lies in the blue-green and passes finally to the yellow region. All the silver hydrosols investigated have a second, better marked maximum in the ultra-violet.

### Inhibition in the Diffusion of Salts into Colloids

T. Tadokoro

J. Chem. Soc., 1918, p. ii. 432

It has been observed that the diffusion of a mixed salt solution into a colloid, such as gelatin, egg-white, and the expressed juices of plants, through the semipermeable membrane is opposed by some inhibitory factor. The mixed salt solutions, which can coagulate these colloids, show that they are subjected to a considerable hindrance during diffusion. The cause of this phenomenon is considered to be as follows: a new membrane is formed at the surface of the colloid by the salts after they have diffused through the semipermeable membrane; this new membrane then retards the further diffusion of the salts.

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## From Eastman Kodak Research Laboratory

### The Physical Characteristics of X-Ray Fluorescent Intensifying Screens

By M. B. Hodgson

Phys. Rev., Dec., 1918, p. 431

Communication No. 67

The use of fluorescent screens for the intensification of exposure is of widespread practice and of considerable importance in practical x-ray photography or roentgenology. Also in the work of Hull, St. John and others, the fluorescent screen has been employed to reduce the lengthy exposures of such x-ray spectroscopic investigations as are dependent on the photographic plate or record.

In dealing with fluorescent phenomena dependent on an x-ray tube for excitation, there are two types to be considered, both of which may be utilized for photographic intensification. The first type is that of true characteristic radiation, the second ultra-violet and visible fluorescent radiation. The true characteristic radiations of all the elements which are feasible to use are within that range of frequencies usually termed x-rays. Hence, the laws pertaining to high frequency radiation govern the photographic use of screens dependent on this principle. In the case of fluorescent emission of ordinary light, the laws of ordinary optics apply.

Of these two types of intensifying screens the second has proven the far more efficient in practical usage.

Of the materials which fluoresce to x-rays in the range of frequencies from the ultra-violet to the red, there are only a few which can be used efficiently for photographic intensification. All of these substances must be in crystalline state. Of these, crystalline calcium tungstate is by far the best, with present photographic x-ray materials. The salt is usually powdered and coated with a suitable binder on a support of some material of slight x-ray absorption, such as cardboard or celluloid. This

screen is then placed in contact with the photographic surface and exposure made through either the screen or the photographic plate or film.

The efficiency of any radiator as a source of photographic stimulation depends primarily on the comparative spectral distribution of the energy of the radiator and the spectral sensibility of the particular photographic plates used. While these relations have not been determined as yet on an equal energy basis for x-ray materials, qualitative analyses have been made.

The fluorescent spectra of calcium tungstate were obtained using a Hilger quartz spectrograph. A Coolidge tube of medium focus was used, the length of exposures averaging 1,000 milliamperes minutes at 8 inch distance from the target to the screen.

Spectrograms were made with the tube operating at 40 K. V., 60 K. V. and 80 K. V. (R. M. S.)

It was found in general the fluorescent spectrum of calcium tungstate as used in the screens examined extended from about 3,600 to 5,200 A. U. at the voltages normally used in radiographic practice. This emission coincides remarkably well with the wave-length sensibility curves of the x-ray plates which are being mostly used.

A New Yellow Dye and Light  
Filters Made from It

C. E. K. Mees and H. T. Clarke

B. J., 1919, p. 48

Communication No. 75

The dyes previously used for making light filters were principally Picric acid, Tartrazine and Filter Yellow. Picric acid, while having a satisfactory absorption, is unstable and as a consequence the early gelatine filters were made chiefly with Tartrazine, which is quite stable. Tartrazine, however, has the disadvantage that it transmits the ultra-violet and that filters made from it are relatively inefficient.

The introduction of Filter Yellow in 1907 supplied a dye having a good absorption in the ultra-violet, reasonably sharp cut in the spectrum and great stability. It was still desirable for high efficiency, especially in filters for aerial photography, that a dye should be obtained possessing the stability and ultra-violet absorption of Filter Yellow but with greater sharpness of cut.

The compounds of phenyl hydrazine with sugars are yellow in color and a soluble compound of this type has been prepared by coupling glucose with para-hydrazinobenzoic acid. The sodium salt of glucose-phenyl-osazone-para-carboxylic acid prepared in this way, proving to be a very suitable dye for the preparation of sharp cut light filters, has been given the name of "Eastman Yellow."

From this new dye light filters have been prepared under the designation of EK-1 and EK-2 filters, which are stable to light, have a very strong absorption for ultra-violet, and are considerably sharper and more efficient than K filters made from Filter Yellow.

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## Books

### Recent accession to the Library:

Mirrors, Prisms and Lenses

J. P. C. Southall

This book presents the principles of geometrical optics in a concise and readable manner. It is notably free from forbidding mathematical treatment. It is a textbook for those desiring a good general knowledge of the elements of optical design. The illustrations and problems are good. The subject of collinear imagery is presented in a manner quite different from that usually used in text-books on light.

## Patent Abstracts

### U. S. Patents

1287327

F. E. Ives K2116

A Camera for taking simultaneous color impressions with a single lens. The light after passing through a screen falls upon a transparent reflector, which reflects light to the blue sensitive film and is so colored as to transmit only red and green light to the other two sensitized films, which are face to face and sensitized selectively so that both are impressed by the light transmitted through the reflector.

1287594

J. Shaw and J. W. Berwick. K/24 K0645

Assigned to Rainbow Pictures Corporation

A Method of Tinting Motion Picture Color Film in which different color selection pictures alternate. One set of color selection pictures is covered by a waterproof resist and the film passed through one dye bath. The resist is then removed and placed over the dyed pictures and the film passed through the second dye bath.

1289940

J. Shaw. Assigned to Rainbow Picture Corporation K/24

A Method of Making Motion Pictures in Color in which red color selection pictures are alternated with the green, blue and yellow color selection pictures. The red pictures are all colored red, while the blue, yellow and green color selection pictures are all colored green in the final positive.

1290794

S. E. Sheppard. Assigned to E. K. Co. K/33

A Colored Photographic Element in which a translucent colored colloidal substance is held in a supporting medium. The colored medium thus provided containing water-fast colored particles may be used in coating a surface like a photographic emulsion, or may be mixed with photographic material for use on a plate or film, etc. Nitrocellulose is dyed, dissolved, and an emulsion then made from this. The emulsion is curdled and the curds purified, melted in water and then filtered to obtain the emulsified particles consisting of more or less partially gelatinized dyed particles of nitrocellulose and gelatine. This may be used for making color plates or filters.

1288753

J. E. Thornton. Assigned to John Owden O'Brien K/34

A Photographic Process particularly intended for motion pictures in color in which each colored area consists of a large number of colored dots of uniform depth and the gradation of light and shade being secured by the thickness with which the dots are grouped, the effect being like that of half-tone work.

1283087

D. F. Comstock K/41

This invention relates to a method for eliminating the difference in contrast between the red and green positives in the two-color process for color photography. The difference in contrast between the negatives made through the red and blue-green filter is eliminated in the positive by printing from these negatives with light of

shorter wave-length than is used in printing the blue-green negative on the positive material. In this way the variation of gamma with the wave length of the exposing light is made to compensate for the original difference in contrast, yielding positives which on being developed equally have the same contrast values. According to the patent this successfully eliminates the usual green highlights and red shadows.

1286890 E. R. Bullock. Assigned to E. K. Co. J84

An Improved Toning Process which comprises the usual method of sulfiding a silver print and then passing it through a bath containing selenium and sodium sulfite or similar salts.

1283115 A. Dreyfus 1511

Process of Making Acetic Anhydride. Anhydrous sodium acetate is treated with sulphuric anhydride or 50% to 70% oleum below 5° C. in presence of an inert solvent; the acetic anhydride is then distilled off.

1286255 1286256 H. Dreyfus 1511

Process for the manufacture of acetic acid based on the oxidation of acetaldehyde to acetic acid with the use of platinum or oxides of copper or chromium as catalysts at temperatures between 150° and 250°C.

1288293 H. Tobler 1511

Process for the manufacture of organic acids such as citric acid in which the impure calcium salts are purified by decomposition with an alkali metal bisulphate, heating and reprecipitation with lime.

1286173 H. Dreyfus 1513

Process of Transforming Cellulose Acetates. The chloroform soluble product is rendered soluble in acetone and dilute alcohol by treatment for a limited period with dilute mineral acid such as 12% nitric acid.

1286025 J. Koetschet and M. Theumann 1514

Process of Making Nitro-acetic Esters of Cellulose. Modification of Patent 845856 of 1914. Cellulose is treated with a suitable mixture of glacial acetic acid and acetic anhydride together with small proportions of nitric acid and a condensing agent such as sulphuric acid.

1283193 H. Hibbert 1516

Solvents and Process for Producing the Same. Carbohydrates are fermented by inoculation with a lactic acid ferment; when the action is complete the products are converted into butyrates by a suitable ferment. The crude butyric acid is transformed into ketones by passing its vapor over heated pumice impregnated with thorium oxide; the product possesses solvent properties for nitrocellulose. If desired, the ketones may be catalytically reduced to the corresponding secondary alcohols, and these in turn esterified with acetic acid.

1284980 O. E. and S. C. Azzoni 2181

The Folding Reflecting Camera, the front and back of which are connected by walls of flexible material with the mirror and upper focusing screen adapted to be swung down close to the back. Special provision is made to prevent the entrance of light around the upper focusing screen after the mirror has been swung up.

1286708 A. C. Milbrath 214

A Film Pack Camera in which one end of the film pack is attached to the end of a flexible focusing screen. The pack in a light tight adapter is drawn to one side, thus extending the screen into focusing position. After focusing, the screen is re-wound and the pack replaced in position and the picture taken.

1286892 A. Stuber. Assigned to E. K. Co. 2152

A Signaling Arm for avoiding double exposure is mounted on a shutter in an inconspicuous position. When the shutter is actuated it swings down to a conspicuous position, thus reminding the operator to wind his film.

1288078 C. H. McClain and D. L. Buren 2152

A Spring Motor Operated Automatic Film Shifter for Cameras which is operated upon the termination of the exposure to advance the film a predetermined distance for the next exposure.

1288221 C. W. Schmidt. Assigned to Ansco Company 2153

A Light-Printing Attachment for Cameras in which a flexible strip is written upon and introduced through a tortuous entrance into a position where an inscription thereon may be light-printed upon the film.

1289357 A. Andrews 2116

An Attachment for Cameras by which the exposure area may be varied. It consists of two doors pivotally hung at the edges of the exposure area. They may be swung to cover the exposure area to any extent.

1287816 J. W. Anderson. Assigned to Anderson Mfg. Co. 219—2116

A Multiple View Camera in which the plate holder is moved by an escapement. The extent of the movement may be varied, so that any desired number of exposures may be made upon the same plate.

1289256 R. C. Peterson 2152

A Double Exposure Prevention Device of the type in which a signal is thrust in front of the finder when the shutter is actuated and is removed when the film spool is turned.

1288607 A. F. Jobke 2237

An Easel particularly intended for enlarging, in which the paper is held in place by suction, an air pump being attached to a chamber behind the easel and there being perforations in the easel.

1286891 J. I. Crabtree. Assigned to E. K. Co. 231

An Ignition Element for holder for flash powder. The element is removable as a whole. It includes a readily removable fuse, the fusion of which ignites the powder.

1288077 J. V. McAdam and C. J. Everett. 247

Assigned to Revolute Machine Company

A Photographic Printing Machine for continuous work, as in blue printing, in which a vertically disposed rotary cylinder is provided with means for passing a sheet of drawings and an interposed photographic sheet around the cylinder and rotating the cylinder, a source of light being provided for use within the cylinder. The speed of the machine may be varied. The light is reciprocated by a mechanism which also rotates the cylinder, but the movement of the cylinder may be stopped without stopping the movement of the light.

1290134 W. M. Dwyer. Assigned to William H. Miner 257

A Machine for Washing Blue Prints in which the separate prints are washed over the top of the machine and are then folded over a roller upon which they hang until dry.

1288461 C. E. Akeley. Assigned to Akeley Camera, Inc. 2614

A Cam Clamp with resilient holding handle for holding in place a universal joint of a camera support.

1287045 R. Klein. Assigned to Ilex Optical Co. 2623

A Photographic Shutter of the setting type. The blades are opened under the force of their own spring or motor and then closed under the force of the motor which has been set. The retarding means acts in two opposite directions with connecting means between the retarding mechanism and the motor means, so that the retarding device is moved in both directions during one operation of the shutter.

1289088 J. Becker. Assigned to E. K. Co. 264

A Finder for Cameras comprising an eccentric lens mounted near the objective and a rear sight mounted near the exposure area, the spacing being such that as the lens is moved up or down, the field of the finder will also automatically be changed.

1285462 E. J. Sweetland 2651

An Apparatus for Developing Photographic Negatives comprising a long, flexible tube. The operator may hold the free end of the film and backing paper at the open end of the tube and permit the roll, to which a weight is attached, to unroll into the tube. The developer is then poured in. Or the spool may be placed at the bottom of the tube and the film drawn out by hand. The flexible bag may also be used for developing plates. If desired, a colored window may be placed in one side of the flexible bag to permit inspection as development proceeds.

1286341 I. M. Kelley 2653

A Photographic Roll Film in which the film is attached to the backing paper between exposure areas, so that any desired exposure may be removed for development before the entire roll has been used.

1290695

H. G. Aylsworth. 2682

Assigned 1/3 each to G. A. Dolan and W. Wolf

A Photometer comprising a view finder with opaque slides movable across it to gradually obscure the finder lens. The operator moves this until the detail in the subject is scarcely visible. Links connect these slides with the shutter, so that the diaphragm opening is controlled by the movement of them. The mechanism of the shutter is similarly controlled, so that the correct exposure may be thus determined through the appearance of the subject in the finder.

1286383

O. Messter 06

Simultaneous Motion Pictures are taken of an orchestra leader from the front and from the rear upon adjacent portions of the same film. The picture showing the front of the leader are displayed on the portion of the screen that is visible only to the orchestra, while the rear view of the conductor is visible to the audience only, so that the projected conductor will appear properly to both the orchestra and the audience.

1285524

F. D. Williams 062

A Tank for the Production of Undersea Photographic Effects particularly intended for motion picture settings. A movable or fixed background is arranged at one end of the tank. There are windows for the entrance of light and a large window in the front through which the pictures are taken.

1289027

C. A. Willat and W. B. Westcott. 062

Assigned to Kalmus, Comstock &amp; Westcott, Inc.

Apparatus for the Production of Motion Pictures in which a large stage is portably mounted on a track system and is movable into and out of a housing, so that in the event of sudden changes of weather it may be readily protected without having to disassemble the outdoor setting. Lighting means are provided with the housing, so that the failure of daylight will not necessitate abandoning work.

1286638

E. S. Hopkins, Jr. 069

Motion Picture Film for use with Sound Reproducing Machines. If the film does not synchronize properly with the sound reproducing machines, it may be shortened or lengthened by the removal of some of the pictures, or the addition of others, or by the addition of blank spaces between some of the pictures.

1286962

R. M. Eaton 3103 0631

An Apparatus for Controlling the Time of Exposure of Motion Pictures. An electrical vibrator is made with an adjustable reed so that its rate of vibration may be changed. This controls the change of pictures. The speed of the period of rest only is changed and the time between pictures remains constant and very short.

1287183

E. C. Bass 3103

A Sliding Focal Plane Shutter for use in cameras of the motion picture type.

1288894 D. Horsley 319

A Motion Picture Camera in which, besides the pictures of the moving principal object, there are simultaneously impressed upon the film from the opposite side of the camera images of a picture film within the camera. If desired, this may be added before or after the principal subject is taken.

1287502 B. Stechbart. Assigned to American Projecting Co. 3202

A Motion Picture Machine of the intermittent feed type. The patent relates particularly to the relation of the hinged gate to the feed mechanism.

1287504 B. Stechbart. Assigned to American Projecting Co. 3202

Framing Means for Motion Picture Machines.

1287146 W. Vidler 3203

A Shutter for Motion Picture Projectors in which a series of holes in different arrangement are placed between the shutter openings, the intention being to avoid flicker.

1288207 C. H. Ruggles 3204

A Box for Holding Motion Picture Reels in which, when the cover is lifted, a holder of the reel will be automatically thrown out, so that the reel may readily be grasped.

1287500 B. Stechbart. Assigned to American Projecting Co. 3205

A Motion Picture Machine in which one of the condenser lenses is supported by a hinged door and is adapted to be swung when the door is closed into proper position in the path of light.

1285375 P. J. Prokop 3208

A Winder for Motion Picture Films in which the film is rewound upon the inside of a coil, so that when winding is completed, rewinding will be unnecessary.

1286662 L. B. Larsen, O. J. Holmes and H. G. Larsen. 3208  
Assigned to Acme Motion Picture Projector Co.

A Motion Picture Machine in which the take-up and feed reels are in a common casing. This casing is divided into two halves, one half being hinged so that when a hinged side of the machine as a whole is open, the casing is readily accessible by swinging out the hinged part of the casing.

1287353 L. B. Larsen, O. J. Holmes and H. J. Larsen. 3208  
Assigned to Acme Motion Picture Projector Co.

A Motion Picture Machine in which the take-up and feed rolls are mounted in a common casing. Separate driving means are connected to the motor by which either reel may be operated.

1287498 B. Stechbart. Assigned to American Projecting Co. 3208

A Reeling Mechanism for Motion Picture Machines in which take-up and feed rolls are mounted in a common casing adjacent each other, with driving means adapted to actuate either reel.

1286874 D. P. Dodd. Assigned to Frank B. Wyatt 3209

A Motion Picture Machine provided with a safety device which operates to throw a shutter into the path of light, and to stop the motor when the film breaks.

1287501 B. Stechbart. Assigned to American Projecting Co. 3209

A Motion Picture Machine provided with a mechanism in which the take-up and feed rolls are both placed in one magazine. The patent relates particularly to the safety gate or shut-off for the mouth of the magazine to prevent the flame of a burning film extending into it.

1287499 B. Stechbart. Assigned to American Projecting Co. 321

A Motion Picture Machine in which an adjustable strut in the front of the machine permits its tilting to any desired angle.

1287503 B. Stechbart. 321 3208

Assigned to American Projecting Co.

A Motion Picture Machine in which the film supply drum and take-up drum are arranged on a common shaft with clutch connection between the shaft and the feeding mechanism and a friction drive between the motor and the take-up mechanism. The film feeding mechanism can be locked in an inactive condition during the re-winding of the film back onto the delivery reel.

1286483 L. Zeigler 325

A Motion Picture Machine of simple structure stated to be intended particularly for home use. The light source and projection lenses are movable together and a rotating shutter in the shape of sectors of a cylinder revolves around the light source.

1287576 H. A. DeVry. 325—3205

Assigned to The DeVry Corporation

A Motion Picture Machine in which a compact arrangement of parts is provided to make a readily portable device. The patent relates particularly to the design of the lamp box with means for ventilating same, so that a fan driven by a motor also operates the film drive.

1288531 H. A. DeVry. Assigned to The DeVry Corporation 328

A Motion Picture Machine particularly intended for advertising purposes in which an endless film is projected. Means are provided for stopping the motor and putting out the light if the film should break.

1288416 A. S. Howell. Assigned to Bell & Howell Co. 33

A Bed Construction for Film Perforating Machines in which provision is particularly made for the avoidance of scratching the emulsion and for accurate guiding of the film strip past the perforators.

1287436 A. C. Remington. Assigned  $\frac{1}{2}$  to R. Dewsbury 34

An Apparatus for Printing and Testing Motion Picture Films in which a test negative is passed through the machine and closely examined wherever a change in density occurs. At such points notches are made in the film which control the varying of the resistance of the lighting circuit. Thus the intensity of the light is changed and under control of the master negatives a series of positives may be printed of uniform density.

1288403 W. F. Garland 351

Developing Apparatus for strip film such as motion picture film. It consists of a long drum, about which the film is rolled, which passes through a bath of fluid. It is connected to a chamber, to which the operator may have access, so that the operations may be performed in daylight.

1285539 A. Wollensak. Assigned to Wollensak Optical Co. 354

A Holder for long strips of film in which the film is wound successively around supports of constantly greater dimensions. The supports are pivoted to the frame and may be swung up as needed for the winding of the film.

1283676 D. F. Comstock and O. F. Conklin. 3639  
Assigned to Kalmus, Comstock and Wescott

In order to eliminate keystone distortion in moving picture projection, a system of tipped cylindrical or toric lenses is introduced between the film and projection lens. Astigmatism is decreased by combining positive and negative cylinders.

## British Patents

121054 N. L. Scott D1212

Emulsion Coating of Celluloid. In order to prevent buckling of film (narrow width film is referred to) the back of the film is dampened before the application of the emulsion and the film is forcibly passed against a smooth and rigid cylindrical surface to which it is rolled down so that it remains adherent under atmospheric pressure as a result of the expulsion of the air from beneath it, the setting of the emulsion being done while the film is passing around the cylinder. The patent deals with an addition to the Scott single width coating machine, showing how the film is made to adhere in order to give a flat surface for coating.

120196 H. L. Maynes 2153

Hand Camera. The camera provided with means for making films, etc., by perforation described in the parent specification (116084) is provided with means movably mounted thereon for gripping the film and means for moving the gripping means to bring successive portions of film into position to have identification marks impressed upon them.

120620 A. S. Baylis 247

Photography. Printing Apparatus. In machines for making photocopies of drawings, tracings, etc., a cable, wire, or the like, anchored at one end and con-

ected at the other end to the lamp switch, carries an adjustable stop which is engaged by a moving part of the apparatus to extinguish the lamp at a predetermined point; the cable, etc., may also operate to stop the machine.

120104

H. Shorrock 2629

**Lens Fittings.** In a camera lens in which two diaphragm apertures are provided in a plane perpendicular to the optic axis, with the object of securing a greater effect of relief in the photographs, means are provided for varying the size of each aperture.

120572

J. P. Hansen 2651

**Photography.** Envelopes, plates and like. An envelope of thick paper or the like for photographic films or plates comprises a back having opposite edges bent over, one of the remaining edges being bent over the edges, and the fourth edge being bent under a strip connecting the edges. A shutter slides between the parts, and has its inner end bent so as to hook under the edge when the shutter is withdrawn, its outer end forming a tongue which is bent behind the back and may be sealed to ensure light-tightness. The envelope may contain a film or a plate carried by strips having an angular section and placed within the envelope along opposite sides. The envelopes may be used in a camera having a hinged back frame and means for engaging the edge of the part to hold the envelope as its shutter is withdrawn.

120910

C. Rothmeyer 2652

**Photographic Cameras, Change-boxes.** A change-box of special construction is loaded and unloaded in daylight by means of specially constructed loading-slides adapted to be fitted on a store-box. The store-box has sliding shutters forming two of its opposite faces, and a wall between and parallel to the shutters dividing it into compartments for exposed and unexposed plates respectively. Flanges surround the shutter openings to enable the loading-slide to be fitted in a light-tight manner to either compartment.

120310

H. Nielsen 2681

**Photography.** Exposure meters. In a device for determining exposures or the amount of flash-light powder to be used, the various factors are represented graphically by lines drawn on squared paper, and the time or weight is ascertained by starting at the given month or distance and following the lines of the squared paper from factor to factor.

120629

R. H. Richardson 3203

**Cinematograph Shutters.** The masking-blade of a cinematograph shutter comprises a foraminous sector, backed by tinted sector with or without a transparent covering sector; one or more flicker-blades consisting of a tinted sector may be provided.

121499

C. F. Kirby 324

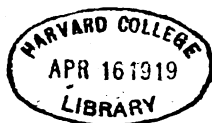
**Projection Screens.** A coating of thinly divided particles of mica or quartz is given to the screen to act as a surface.

Monthly  
**ABSTRACT**  
Bulletin



April, 1919

Issued by the Research Laboratory  
**EASTMAN KODAK COMPANY**  
Rochester, New York



*W. E. Currier,  
Belmont*

# Monthly Abstract Bulletin

Vd. 5, No. 4

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April, 1919

## Errata

In the *Abstract Bulletin* for March, 1919, on page 44, line 2, instead of *1918*, read *1919*. On page 52, line 2, instead of *Shumb* read *Schumb*. On page 53, line 24, instead of *E. B. Shreve* read *E. B. Shreve*, and on page 53, line 25, instead of *Sci. 48, 324-7, C. A12, A.,* read *Science, Sept. 27, 1918, p. 324.*

## Photography

- Uniformity of Film Sensitivity of Photographic Plates from Measurements with the Thermo-Electric Photometer

H. T. Stetson 015

Popular Astronomy, 1919, p. 151

The method of artificial star images was used, the plates being Seed 23 and Seed 30. Large variations in sensitivity over the same plate were found within 2 cm. of the edge of a plate, variations of 100% being found. Nearer the center the variations were smaller but still rather large, being of the order of 25%

- The Fundamentals of Photography.  
Chapter XII. Printing Methods.

C. E. K. Mees 017

Kodakery, March, 1919, p. 18

A description of the following printing media: plain salted paper, gelatino-chloride paper, carbon, platinum, and developing-out-papers.

- A Composite Color Process

K/2 K/3

B. J. Col. Sup., 1919, p. 5

A description of British patent 112,769, granted to F. E. Ives. The basis of this is a combination of a two-color mosaic screen plate and a single plate sensitive to the other complementary color. For example, the screen plate may record green and blue and the other plate red. The screen plate units (dyed yellow and magenta) coated with a panchromatic emulsion and the red sensitive plate are arranged in contact, emulsion to emulsion, and the exposure is made through the mosaic screen. On development two negatives are obtained of the subject, the screen negative recording green and blue and the other recording red over its whole surface, since the dyed screen units both transmit red. From this negative a blue-green dye positive is made and from the mosaic composite negative positives are printed, one by green light and the other by blue light on a corresponding color sensitive emulsion, and these are converted to dye positives. The positives may be made successively on a single sensitive surface or separately on two surfaces. The two or three positives are then registered in contact to form the three-colored picture.

- A New Color Process on Printing Paper

K/35

B. J., 1919, p. 88

Report on a lecture given before the Royal Photographic Society by S. R. Williams in which he explains how he secures three separate records from a single camera exposure made through a Joly three-color screen, by means of a key plate bearing lines double the width of those on the negative and separated by a clear space equal in width to a single line.

## Decennia Practica—Color Photography

K/53

B. J. Col. Sup., 1919, p. 7

Color Separation by Dispersion and Diffraction. Contains descriptions of the Drac method and the Ives diffraction method.

## Weights and Measures

R. C. Bayley G1

Amat. Phot., Feb., 1919, p. 155

A discussion of the relative merits of the metric and avoirdupois systems. The main arguments offered against the metric system are that it is not universal (otherwise why the many advocates thereof) and secondly the fact that in France the tendency is to get back to the pound by quoting prices in half kilos. ( $\frac{1}{2}$  kilo = 1 lb. approximately). (Surely this is rather an attempt at a compromise than an admission of inferiority of the metric system. The author having dealt in pounds and shillings and in stones, pecks, grains, and scruples, would no doubt be more in favor of the metric system after experience with a metric currency. The United States has derived the benefits of this, and why not from a similar system of weights and measures! In weighing and mixing our photographic chemicals the metric system is of particular advantage especially when it comes to a matter of a simple problem like that of mixing say, a 5% solution of potassium bromide.)

## Print Washing

J6

B. J., 1919, p. 58

The editors draw attention to the influence of hypo in poorly washed prints on the tone and quality of prints sepia toned by the ferricyanide bromide method.

## Purple Tones on Bromide

E. Manley J83

B. J., 1919, p. 62

Purple tones are obtained by bleaching in ferricyanide and bromide, and after washing, re-developing in a restrained hydroquinone developer containing ammonium carbonate. A formula is given.

## Successful Squeegeeing and Its Uses

F. L. Kimrey L6

Abel's Phot. Weekly, Feb., 1919, pp. 183, 206

Print should be thoroughly hardened and after washing sponged over to remove dirt and grit. The thorough cleaned ferrotype plate is then covered with a little of a solution of 1 oz. paraffin oil in 5 oz. of benzene and then polished with a soft cloth previously washed to remove starch and sizing material. Starch in the polishing cloth is a frequent cause of sticking. The plates are cleaned with benzene, never with soap or any alkaline cleaner. A separate cloth should be used for this part of the work and another one for the paraffin polishing and so on. Prints may be mounted on linen by smearing with a thin coat of liquid glue while on the ferrotype plate and then squeegeeing the damp linen in contact.

## Practicus in the Studio: Artificial Lighting

0314

B. J., 1919, p. 59

A description of the open and closed arc, mercury vapor, and tungsten lamp methods of lighting.

- Notes on the Use of Lantern Slides made from Oiled Paper R. G. Hudson 045  
 Science, Jan. 31, 1919, p. 120

The drawing or other design is done upon thin white paper, which is then rubbed with Neatsfoot oil. The paper is then mounted in a suitable cardboard holder for projection.

- Panoramic Photography and Perspective C. J. Stokes 051  
 B. J., 1919, p. 67

An article of interest to Cirkut workers. In order to get better perspective when photographing a group it is recommended to arrange the subjects in the form of a curve, and instructions are given for working out mathematically the shape of this curve and also the position of the camera relative to the curve.

- Modern Applications of Photography A. B. Hitchins 089  
 J. Frank. Inst., Feb., 1919, p. 129

This is a non-technical but general and interesting account of the technical uses of photography. It explains the difference between the spectral sensitiveness of the eye and of the photographic plate and the way in which difficulties due to this difference have been overcome. It outlines processes of the reproduction of colors and the registration of X-ray shadows, and illustrates the uses of photography to the astronomer, the physician and the soldier.

- Gum-Printing on Bromide Paper T. H. Greenall /84  
 Amat. Phot., Feb., 1919, p. 135

A bromide print (preferably matte) is coated with a suitable colloid (a mixture of gum arabic and gelatine) containing a suitable pigment and then treated with the following toning solution:

<i>A</i> Copper Sulphate . . . 2 grains	<i>B</i> Potassium Ferricyanide . . 4 grains
Sodium Citrate . . . 8 "	Potassium Bromide . . . 2 "
Water . . . . . 2 ounces	Water to . . . . . 2 ounces

For use, *A*, 1 vol.; *B*, 1 vol.; water 2 vols. This solution tones the silver image forming copper ferrocyanide and the colloid in contact with the image is simultaneously insolubilized. If the print is then developed in hot water a pigmented print is left. For black and white prints it is necessary to re-develop the slight amount of the silver image halogenized by the toning bath, while if the print is to be sulfide-toned it is necessary to first remove the copper from the image by treating with caustic soda, then with a weak solution of hydrochloric acid and subsequently washing.

- Narrow Width Film E. K. Gillett 1212  
 Mot. Pict. News, Jan., 1919, p. 437

Dimensions of the standard narrow width motion picture film as recommended by the Society of Motion Picture Engineers are given and arguments put forth for its adoption.

- "Non-Flam" Film** F. H. Richardson 122  
Mov. Pict. World, March, 1919, p. 1211

A series of arguments for and against the exclusive adoption of non-inflammable motion picture film.

- Chemistry of Photographic Materials** 15  
Studio Light, Jan., 1919, p. 14

- Amidol vs. MQ for Bromide** 153  
B. J., 1919, p. 75

An article in the Rajar Trade Notes states that from a commercial point of view an MQ developer is preferable to Amidol. Objections cited against Amidol are its bad keeping qualities and the consequent staining of the fingers, trays and prints.

- Names to Replace the German Names** L. P. Clerc 1537  
of Developers  
Photo-Revue, 1919, p. 26

The importance of a generic name for substances like methyl-paraminophenol and para-oxyphenylglycin as distinct from the trade names of the various manufacturers is pointed out. The name "Génol" for Metol and "Iconyl" for Glycin have been agreed upon by the French Syndicate of Photographic Manufacturers.

- Stained Negatives** 1544  
B. J., 1919, p. 65

Editorial suggests as a partial remedy for fixation stains intensification with the Monckhoven formula which converts the yellow stain into a gray one.

- Methyl-Violet as a Red Sensitizer** U. Yoshida 158  
of the Photographic Plate  
J. Soc. Chem. Ind., 1919, p. 28A

Bathing in an ammoniacal 50%-alcoholic solution of the dye, the maximum added sensitiveness was found at 6400 A. U.

- Iodine Cyanide Reducer** 165  
B. J., 1919, p. 57

In making the iodine solution the iodide should be dissolved in only just enough water to dissolve the crystals and then the iodine stirred in, and after it is dissolved the solution diluted to the right strength. Sometimes the reducer will prove inactive owing to poor cyanide; cyanide of poor quality sometimes contains a large amount of cyanate.

- A Reliable and Permanent Method of Intensification** J. M. 165  
B. J., 1919, p. 87

Advises re-development in non-staining developer without bromide after bleach-

ing as follows: Make up four solutions.

<i>A</i> Potassium Bichromate, 150 grs.	<i>B</i> Potassium Bromide, 400 grs.
Water . . . . . 10 ozs.	Water . . . . . 10 ozs.
<i>C</i> Hydrochloric Acid 200 drops	<i>D</i> Potassium Metabisulphite 2 ozs.
Water . . . . . 10 ozs.	Water . . . . . 10 ozs.

Use equal parts A, B, and C to bleach, rinse and clear from yellow stain in D.

New Apparatus

219

B. J., 1919, p. 76

Describes the F. and S. Identification Outfit and suggests uses for it.

Taking Photographs from Aeroplanes  
and Balloons

J. A. Lefranc 219—083

Sci. Amer. Sup., Jan., 1919, p. 60

An exhaustive article illustrating the various types of aero cameras recently used by the Germans.

"Close Up" Pictures

B. J., 1919, p. 58

The editorial comments upon the excellence of some of the close up motion pictures, and predicts a good market for an apparatus which would enable portrait photographers to make motion picture portraits at a reasonable price. The necessity for a suitable viewing apparatus is also pointed out.

Cinematograph or Kinematograph

A. Lockett

B. J., 1919, p. 78

The author makes a plea for the elimination of the "k" from the word kinematograph in view of its suggestive Teutonic origin. (According to a correspondent in the succeeding issue the word "kinema" was first used in an English patent around 1870, which would indicate that the word may be English. The adoption of the term "motion picture" would eliminate any such controversy.)

The Future of Aeroplane  
Photography

A. Brocker and L. J. Holst

B. J., 1919, p. 84

Many applications of aerial photography are suggested as follows: Topographical survey work, production of maps for real estate records, location of sites for irrigation purposes, etc. It is considered that a spring-driven automatic vertically suspended camera is most suitable for this work and it is stated that the camera can be kept approximately in a vertical position in relation to the earth by making use of gravity and suitable air cushions to dampen oscillations. The author briefly describes the Brock aero camera, but his remarks tend to give the reader the impression that the work of others in connection with aero camera design and manufacture is of very little significance. (Many of the authors' claims for originality are open to question).

Mr. A. S. Cory, Technical Editor of the Motion Picture News, died on January 11th a victim of influenza.

## Physics

### Electro-Thermo-Regulator for Water Baths

C. I. Hall

Science, Feb. 28, 1919, p. 214

A device employing a special metal for thermostatic work is described. It can be furnished .015 to 0.25 inches thick, special thin .005 inch. Anything to 6 inches wide and 36 inches long. The thermostat thus made is said to be very sensitive.

### The Detection of "Ghosts" in Prisms

T. Smith

Sci. Amer. Sup., Feb. 8, 1919, p. 92, and Feb. 15, p. 108

An article from the British National Physical Laboratory dealing with a method for developing prisms free from undesirable reflections.

### Aeronautics in the United States, 1918

G. O. Squier

Proc. Amer. Inst. Elect. Eng., 1919, p. 53

Major General George O. Squier, Chief Signal Officer of the United States Army, reviews in this address the development of Military Aeronautics in the United States up to the signing of the armistice, Nov. 11, 1918. The following topics are discussed: 1, Resumé of Aircraft Production; 4, Remarks on the Physical Conception of the Air; 5, Production of Helium on a Commercial Scale; 6, Meteorological Service in the Army; 7, Physiological Study of the Flier; 8, Activities of the Bureau of Standards; 10, Work of the Science and Research Division of the Signal Corps; Instruments, Cameras, Secret Signaling, Color Filters, etc.; Radio Developments; 12, Liberty Engines.

### American Engineering Research

W. R. Whitney

Proc. Amer. Inst. Elect. Eng., Feb., 1919, p. 115

The author discusses the problem "How shall we insure the preparation of plenty of American men of science by some system which makes us independent of foreign assistance?"

### Research in America After the War

R. A. Millikan

Proc. Amer. Inst. Elect. Eng., 1919, p. 129

The author draws two lessons from the war, (1) that the distinction between men whom we commonly call pure scientists and the men whom you call the applied scientists has entirely disappeared; (2) that one cannot safely depend upon so-called undirected inventive genius of a people to obtain large results. He discusses ways in which research in industrial and pure science is likely to be stimulated in the near future and briefly describes the organization of the National Research Council.

### Note on a Contact Lever, Using Achromatic

C. Barus

Displacement Fingers

Proc. Nat. Acad. Sci., Feb., 1919, p. 39

A description of an apparatus consisting of a contact lever attached to a mirror and a rectangular interferometer. The apparatus may be used as a spherometer, as

an instrument for determining the degree of plane parallelism of a plate, and also to test the degree of wedge-shape of long strips of glass from centimeter to centimeter of length.

Ionization and Resonance Potentials for  
Electrons in Vapors of Magnesium  
and Thallium

P. D. Foote and  
F. L. Mohler

Phil. Mag., Jan., 1919, p. 33

A continuation of work on this subject previously abstracted. Ionization and Resonance potentials are here given for the above metals and verified by the quantum relation for the predicted spectral line.

On the Optical Character of Some Brilliant  
Animal Colors

Rayleigh

Phil. Mag., Jan., 1919, p. 98

A summary and criticism of observations and theories of the cause of iridescence of birds and beetles. Of the two views, interference due to lamellar structure and selective reflection involving anomalous dispersion (and consequently anomalous reflection) in the neighborhood of a strong absorption band, the author favors the former. The latter effect appears to him insufficient, as observed in known dyes, except in the polarized components if viewed with a Nicol. A possible surface structure of the lamellae is suggested which would give the observed slight variation of color with angle and small degree of polarization.

Principle of Molecular Scattering of Radiation

J. Larmor

Phil. Mag., Jan., 1919, p. 161

Scattering from crystals which Rayleigh excluded is shown theoretically possible in spite of systematic spacing, if thermal agitation of consequent Doppler effect be taken into account. The same reasoning aids Rayleigh's explanation of scattering by molecules of air.

The Absorption of X-Rays

T. E. Aurén

Phil. Mag., Feb., 1919, p. 165

The relative absorption co-efficients of X-radiation of a number of elements were determined. On chemical compounds the law of additive absorption was found valid. The relative atomic absorption co-efficients were also determined for most elements. From these data were made estimates of the distributions of electrons in atoms.

A New Experimental Determination of  
the Brightness of a Black Body and  
of the Mechanical Equivalent of Light

E. P. Hyde,  
W. E. Forsythe and  
F. E. Cady

Phys. Rev., Jan., 1919, p. 45

In a recent number of the Astrophysical Journal the authors of this paper present data on the visibility of radiation, obtained by direct comparison, without the flicker method. By the use of this data and Planck's equation for the distribution of energy in the spectrum of a black body, they now compute the relative bright-

nesses in candle power per sq. cm. of the surface of such a body at different temperatures. They compare their values with the brightness-temperature curve obtained by direct measurements upon two black body furnaces. The temperatures for this curve are based upon  $1336^{\circ}$  K as the melting point of gold, and  $14350^{\circ}$  deg. as  $C_2$  in Plank's equation. The agreement between values given by the two methods is exceedingly close. They also, on the basis of their visibility data, give  $0.00150 \pm 0.00005$  watts per lumen as the mechanical equivalent of light, and suggest specifications for the black body standard of candle power.

Ionization and Resonance Potentials for  
Electrons in Vapors of Arsenic,  
Rubidium and Caesium

P. D. Foote,  
O. Rognley and  
F. L. Mohler

Phys. Rev., Jan., 1919, p. 59

This paper presents a continuation of work published in the Philosophical Magazine and reviewed in this Bulletin for Oct., 1918. For Arsenic the authors predict a hitherto undiscovered spectral series in the ultra-violet, and they obtain also the frequencies of certain known lines in the spectra of Rubidium and Caesium.

Energy of the Characteristic X-Ray  
Emission from Molybdenum and  
Palladium as a Function of the  
Applied Voltage

B. A. Wooten

Phys. Rev., Jan., 1919, p. 71

The Bragg X-Ray spectrometer which has been employed to study the X-radiation from a metallic target, and to measure the wave lengths of particular lines in X-Ray spectra, has been adapted to measure the relative intensities of characteristic lines. The author plots this intensity as ordinate and a function of the square of the voltage. The curves, except near the axis, are straight lines and the intercepts of these lines on the axis of abscissas, are, for both elements, the same for the A and B lines. For both elements are also the two curves originate at the same point. The voltages concerned and the frequencies of the B lines are, in the case of molybdenum precisely, and in the case of palladium nearly, such as to conform to the general equation  $Ve = hn$ .

Amplification of the Photo-electric Current  
by Means of the Audion

C. E. Pike

Phys. Rev., Feb., 1919, p. 102

Apparatus and methods are described by which it is possible to amplify photo-electric currents as much as 18000 fold.

On the Specular Reflection from  
Rough Surfaces

T. K. Chinmayanadam

Phys. Rev., Feb., 1919, p. 96

The author obtains from considerations of theory an expression for the intensity of radiation regularly reflected from a surface whose roughness he represents mathematically. Values given by his equation agree well with those obtained experimentally by Gorton for small angles of incidence. For larger angles it is found possible to build an empirical equation fairly representing the facts.

## General and Inorganic Chemistry

### A Contribution to the Study of Tellurium Sulfide

A. M. Hageman

J. Amer. Chem. Soc., 1919, p. 329

At temperatures below—20° C. tellurium sulfide ( $\text{TeS}_2$ ) is a stable compound. At temperatures above—20° C. dissociation takes place. The degree of dissociation may be determined by the amount of sulfur that can be extracted with carbon disulfide.

### A Study of the Preparation of Certain Organic Salts of Tellurium

A. M. Hageman

J. Amer. Chem. Soc., 1919, p. 342

Methods for preparing tellurium acid tartrate and tellurium acid citrate are given.

### The Sign of the Potential

*Zeits. f. Elektrochemie*, 1918, 24, p. 40

The Bunsen Society recommends the negative sign for the zinc electrode, the positive sign for the silver electrode, etc. (This corresponds to the recommendations of the American Electro-Chemical Society.)

### Automatic Copper Plating

J. W. Richards

*Brass World*, Feb., 1919, p. 59

The sheet iron is passed between rolls which apply a mixture made up of 4 lbs. copper oxide, 4 lbs. finely precipitated copper ground together, and made to the consistency of a light varnish by grinding it in 1 gal. of Mexican crude oil of specific gravity 14 to 16 deg. B. The sheet is then run into a furnace, the temperature of which is well above that of the melting point of copper. The asphaltic base of the oil has sufficient reducing power to reduce the copper oxide and any oxide of iron. The atmosphere of the furnace is kept reducing. A firm, adherent coating is produced. (U. S. patents 1197694 and 1197695, Sept. 12, 1916.)

### Separation of Potash Salts

H. P. Bassett

*Chem. Met. Eng.*, Jan., 1919, p. 76

A discussion of the theory and some of the author's results.

### The Function of Barium Sulfate in Accumulators

O. Scarpa

*Sci. Abst.—Elec. Eng.*, 1918, p. 429

Scarpa found physical properties of barium sulfate mixed with lead oxides of negatives in order to render mass more porous had large influence on the life and capacity of storage battery. Microscopic observations showed that barium sulfate prevented "soldering" of lead particles of the negative paste.

### The Industrial Laboratory

G. Quaink

*Elektrot. Zeits.*, Sept. 5, 1918, p. 357

The shortage of raw material, the use of substitutes, the change of the sales territory, increased requirements of the buyers and the absence of skilled labor during the war have placed the German industry face to face with several tasks which could have been solved only with the co-operation of the industrial laboratories. The required results would have been carried out with less difficulty, better, quicker, and

more cheaply if these laboratories had been suitably installed for the purpose. New conditions and peace will bring new tasks, preparations for which should be made at an early date. It is pointed out that in each laboratory the requirements of its particular industry should receive special attention. The illustrations show how the Werner Works of the Siemens & Halske Co. has equipped its industrial laboratory.

## Analytical Chemistry

Minimum Conductivity in Neutralization W. D. Treadwell  
Acta Chem. Helvetica, 1918, I, 97

Mathematical critique.

Gravimetric Determination of Calcium L. W. Winkler 9  
Chem. Abst., 1919, p. 293

The author concludes in favor of the oxalate method.

Calcium and Magnesium in Saline Solution E. Cnals  
Bull. soc. chim., 1918, 23, p. 422

## Colloid Chemistry

Determination of the Adhesiveness of Glue M. Rudeloff  
J. Soc. Chem. Ind., 1918, p. 743 A

Solution of glue applied to planed end surfaces of two pieces of red beech 185 mm. long, 125 mm. broad and 50 mm. thick and these are placed so that glued surfaces may cross at right angles. Strips are allowed to dry under definite pressure and the force required to tear the pieces of wood apart is measured. The author found that for glue solutions up to 200% water (referred to weight of glue dried at 100° C.) the tenacity decreased proportionately as wood was heated prior to glueing, but with 380% water greater heating had favorable effect. This relation is not linear. Pressure under which sample is dried is without effect with 150% water. Test conditions adopted were 150% water, heat wood to 40° C. in dry air and dry under 0.84 kilo per sq. cm.

Colloid Chemistry and Its Industrial Application  
F. G. Donnan, W. C. McC. Lewis,  
E. F. Armstrong and A.S. Shorter  
J. Chem. Soc., 1919, p. ii. 13

The first report of the British Association committee appointed to compile information regarding the advances made in capillary and colloid chemistry with special reference to industrial processes.

The Use of Acid Colors in the "Dry-Dyeing" M. Fort  
Process

J. Soc. Dyers Colorists, 1918, 34, p. 226

Many acid dyes can be dissolved in phenol, cresol, etc., which solvents have remarkable penetrating powers with regard to animal fibers.

An Oscillation Method for Measuring  
the Size of Ultramicroscopic  
Particles

P. V. Wells and R. H. Gerke

J. Amer. Chem. Soc., 1919, p. 312

The general properties of gaseous dispersoids and the application of this method of size-determination, which is based on the oscillation amplitudes of ultramicroscopic particles in an electric field reversed by a rotating commutator, to their statistical study are briefly discussed.

Amphoteric Colloids. I. Chemical Influence  
of the Hydrogen Ion Concentration

J. Loeb

Chem. Abst., 1919, p. 326

Treatment of gelatine with sodium hydrate followed by washing indicates formation of a sodium gelatinate, the sol and gel properties of which are influenced only by univalent cations; bivalent cations inhibit effect of univalent. Conversely, with hydrochloric acid, gelatine hydrochloride is formed, sol and gel of which are influenced only by univalent anions. The iso-electric point lies at  $C_H = 2.10 \times 10^{-6}$  or  $p = 4.7$ . Parallelism of swelling, viscosity and conductivity curves is discussed on these lines. (No reference is made to previous fundamental work of H. R. Procter, *Trans. Chem. Soc.*, 1914, p. 313, in which the chemical theory of amphoteric behavior of gelatine is worked out very fully).

Amphoteric Colloids. II. Volumetric Analysis of  
Ion-protein Compounds; Significance of the  
Iso-electric Point for Purification

J. Loeb

Chem. Abst., 1919, p. 237

Cf. previous abstract. The simplest method of obtaining amphoteric colloids free from ionogenic impurities probably consists in bringing them to the H-ion concentration proper to the iso-electric point.

Spontaneous Transformation to Colloidal  
State of Solutions of Odorous Substances  
Exposed to Ultra-violet Light

H. Zwaardemaker  
and F. Hogewind

Chem. Abst., 1919, p. 275

Colloidal Silver

A. Pickles

Chem. News, Nov. 22, 1918, p. 358

Silver chloride was converted to silver oxide and reduced with 60% formaldehyde.

"Soluble" and "Insoluble" Colloids, Genuine  
and Spurious Jellies

E. Herzfeld  
and R. Klinger

Chem. Abst., 1919, p. 329

Theoretical: in genuine soluble colloids the solute forms combinations with many molecules of solvent; in insoluble colloids dispersion is due to adsorption of substances with high affinity for water. Proteins are reckoned in this class. Gelatine is considered as a mixture of polypeptides polymerized by calcium salts.

## Organic Chemistry

### The Preparation of Metol

R. N. Harger

J. Amer. Chem. Soc., 1919, p. 270

The conditions in which the best yield is afforded by the process patented by Merck in 1913 are described. It is shown that when equimolecular quantities of hydroquinone and methylamine are caused to react, the best yield obtainable is 45% of the theoretical; whereas if twice the calculated quantity of methylamine is employed, the yield rises to above 70%. Three to four hours heating at 200° C. is necessary; but if the time be extended, decomposition acts in the formation of tarry matters. A new test for p-methylaminophenol is described: on treating a very dilute solution with mercuric acetate, an intense purple color is slowly induced, attaining its full intensity after three minutes. This color is not given by p-aminophenol or hydroquinone.

### Nitration of Cellulose and Determination of Nitrogen in Gun Cotton

A. Heroe

J. Soc. Chem. Ind., 1919, p. 56 A

Original *Moniteur Scientific*, 1918, pp. 62, 241, 245. As per cent water in nitrating bath increases, per cent N in product decreases. Variation of per cent nitric acid in nitrating mixture within fairly wide limits has very little influence. Author claims that mixing the nitrating acids by air in large quantities does not give a homogeneous mixture throughout the tank. He calls attention to the retention of nitric oxide in the sulphuric acid in the decomposing chamber when using the Lunge nitrometer.

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## Books

### Recent accessions to the Library:

#### Photograms of the Year 1918

Iliffe & Sons, Ltd., London

A collection of reproductions of photographs by pictorial workers from various parts of the globe.

#### La Photographie Animée (Animated Photography)

E. Trurat

Gauthier-Villars, Paris

A treatise of interest mainly to the projectionist, dealing with the evolution of the present motion picture projector. The book is very copiously illustrated.

# Patent Abstracts

## U. S. Patents

1287027

J. Jansen D13

A Dryer for Coated Paper. The paper is passed in a continuous strip over a series of heated rollers, between which it is bent in a reverse direction and subjected to cooling fans. Special stress is laid on the desirability of the bending of the paper during drying and the cooling which prevents its becoming overheated.

1287110

J. O. Ross. D13

Assigned  $\frac{1}{2}$  to B. F. Sturtevant Co.

A Drying Apparatus in which a sheet of material is hung from a series of slats and air directed into the loops which hang between these slats.

1287172

B. R. Andrews D13

Apparatus for Drying Sheet Material such as Coated Paper. The paper is passed over a feed roller and directed into the path of a series of slats upon an endless movable plate. The slats form supports from which the paper hangs in loops as it passes through the drier. It is held in position upon the slats by air being blown upon it.

1290806

W. H. Thwaites X421

An Installation of X-Ray Apparatus for Use by Dentists in taking X-ray photographs of teeth of patients, in which the operator and patient are protected from the X-rays while permitting of any desirable adjustment.

1286251

P. P. Door X423

A holder for X-ray Dental Films in the mouth of the patient.

1291405

L. X. Champeau 219—2104

A Camera with a Folding Bellows, each fold of the bellows having baffle plates which project at different angles, depending upon the amount that the bellows is extended. They prevent undesired reflection of light.

1291920

G. I. Kester. Assigned to E. K. Co. 2102

A Camera having a Reflecting Mirror for Focusing, in which an ordinary iris type of shutter is used. Upon pressing down an actuating handle, this shutter is first closed, then the mirror is raised from in front of the sensitive plate and the shutter then operated.

1291004

C. E. Hutchings. Assigned to E. K. Co. 2105

A Removable Camera Back for use with Film Packs or Plates. The rear of the back is connected by a collapsible bellows with the front thereof, so that it may be compactly folded together when no plate or film pack is in position.

1292036

W. A. Peters. 2152

Assigned to International Patent Licensing Corporation

A Camera in which both reels for a roll of film are carried upon the same end of the exposure area. One of them is drawn by a rod across the exposure field. The

rear end of the bellows is attached to a movable frame which, when the camera is open, is in front of the space through which the movable roll passes. The bellows and its frame can be moved and folded into this space when the camera is not in use.

1291994 A. McI. Maxwell 2152

A Roll Film Camera in which the take-up roll is spring-driven. When the cable release is actuated to operate the shutter, it releases also at the end of its movement the spring-drive for the take-up roll.

1289012 W. H. Stavenhagen 22

A Projecting Machine in which a number of transparencies are mounted on a cylindrical surface which revolves around an obliquely arranged mirror. A source of light is thrown from the outside through the transparency upon the mirror and thence is projected to a screen.

1288730 J. H. Stanfield. 222-265

Assigned to V. B. Cutler

A Magazine for Magic Lanterns, and the like, in which the views are in two stacks and are constantly being brought forward in one and moved rearwardly in the other, and shifted from each to the other, so that a continuous succession of them is brought before the exhibiting position.

1286269 W. V. Foley 2231

A Housing for a Light for Projecting Purposes in which special means is used for ventilation and in which the reflector is adjustable with respect to the light.

1292271 J. L. Disney 227

A Collapsible Stereoscope of compact form.

1292230 C. Barbieri and P. Carpenter 25

A Machine for Treating Photographic Prints, particularly blue prints, in a continuous band. The fluids are applied to the sensitized surfaces only and the band is not passed through a bath. They are then passed through wringers and then over a drying apparatus, and as the paper is not saturated they are quickly dried.

1291453 E. H. Farmer 2541

A Developing Tank for Roll Film Cartridges. A roll is placed upon a suitable axle, the end of the paper secured to an attaching means on a drum, and the film then wound upon the exterior surface of the drum, where it is submitted to the developing bath. If desired, several drums of different sizes may be placed one within another, each carrying a film of appropriate length.

1289943 V. G. Smith. 261

Assigned to E. Gibson and L. V. Bowlus

An Attachment for quickly securing a camera in place upon a tripod. A projection carried by the camera is thrust into a socket of the tripod base, where it is gripped by a cam-actuated set of jaws.

1288067 A. P. Little 2682

A Photometer Employing a Self Luminous Surface as the comparison screen. A disc-like graded screen is used to calibrate the amount of light admitted from the light source to be measured.

1291375

C. I. Berg. 29

Assigned to The Invisible Roll Screen Co.

A Metal Binding Strip for use on the edge of lantern slides.

1289129

F. Douthitt 07002

Method of ascertaining the combination of stops for the production of half-tone dot negatives on a process camera. Consists of spring tape which indicates automatically camera extension and stop necessary, and an enlarged sector connected with iris diaphragm to enable required aperture to be readily obtained. (The idea is not new.)

1285015

C. P. Browning 074

Process for Simplified Method of Engraving. Metal plate is sensitized, then covered with rubber solution, then with gelatine emulsion. Exposure is made, negative developed, then exposure is made through this negative, then gelatine and rubber coatings removed, the colloid print developed, and the plate prepared for etching. (The process has been anticipated by Dodge.)

1291276

C. Ubelmesser. 3101

Assigned to Cru Patents Corporation

A Motion Picture Projector in which a governor simultaneously indicates to the operator the speed of the film and projects an indicating member before the exposure area, so that there is cast upon the screen a legend indicating the speed of the film. As there is used in the projector film having upon the picture another legend, the operator can compare legends to make sure that the correct speed is being used.

1291277

C. Ubelmesser. 3101

Assigned to Cru Patents Corporation

A Motion Picture Camera in which a governor simultaneously indicates the speed of the film to the operator and projects before the picture area a legend which is light-printed upon the film, recording the speed.

1291865

V. M. Harris. 315—325

Assigned to Klix Mfg. Co.

A Motion Picture Camera and Projector stated to be especially designed for home use. It is intended to operate at a much lower speed than the commercial projector, only seven or eight exposures per second being made. In taking the pictures the exposures are as short as is customarily the case, but when the pictures are projected the period of projection of each picture is made comparatively long and the dark period as short as is usual in commercial practice.

1292153

M. W. Thompson 319

A Method of Presenting a Complete Plot of motion picture story, which consists in simultaneously showing in a divided picture sets of separate pictures, the sets showing simultaneous events leading up to a common climax, the climax being shown as a single picture.

1291971

D. F. McGraw. 3103

Assigned to Safetygraph Educational Film Co., Inc.

A Shutter for Moving Picture Machines which, instead of being opaque, is made up of a roughened light-transmitting and light diffusing material.

1290947

C. Erskine. 32

Assigned to H. H. Walsh

A Projecting Device for Advertising Purposes consisting of a box, the front of which is a transparent screen. There is in the box a projector throwing advertising matter upon the screen, the advertising matter being an endless web passing between a source of light and the lenses.

1291275

C. Ubelmesser. 320

Assigned to Cru Patents Corporation

A Framing Device for Motion Picture Machines in which a special clutch is used to permit a fine adjustment.

1291829

L. D. Gillette 3204

An Attachment for Moving Picture Machines whereby the films from several shipping reels are wound upon a large reel, the ends being attached together. They are then wound upon a large feed reel, from which they may be passed through the projector in the usual way.

1288282

F. C. Taylor. 3205—32

Assigned to F. McCann

A Portable Projector Case for moving picture apparatus in which the lamp house is movable relative to the case, so as to be inside of it during transportation and readily movable out of the casing and to operative position by gravity when the door of the case is open.

1288555

E. A. Fritz 36

A Spotting Mount for Camera Dissolve Apparatus. A series of movable leaves permit the diaphragm to be changed so that the shape of the opening can take different forms such as a star, heart, or triangle, the size of which is gradually changed.

1291246

36

Motion Picture Camera. The object of the invention is to photographically record in the corner of the picture the number of pictures made per minute. A governor driven by the crank movement actuates a sliding collar which carries a stencil plate bearing numbers 700, 800, etc. Through a small auxiliary exposure gate, one of these numbers is impressed upon a corner of the picture area by means of light. The number so impressed depends upon the crank speed. To enable the operator to learn the speed when cranking, a pivotal pointer also actuated by the governor, moves over an arc index on the outside of the camera.

1291452

E. H. Farmer 364—2645

A Box Camera with which is furnished an enclosing casing having an opening in the front and an eye aperture in the rear. The user places this box upon a tripod and composes his picture by means of the empty box, placing his eye to the small opening in the rear. He then places the camera in the box and takes the picture. There is also supplied a finder consisting of a single element, this being a convex mirror which simultaneously reflects and focuses a view of the subject. The shutter may be either sliding or a pivoted blade, and is actuated by hand, or by a rubber band. A removable roll-holding casing and a special form of spool are described.

## British Patents

121751

H. Shorrocks K32—3203

**Cinematograph Apparatus.** In a cinematograph shutter, the masking blade, or the flicker blades, are made up of strips of different translucent material; the shutter may also comprise color screens which may be arranged so that they can be turned behind the blades, or so that they can be turned into their operative position, while the shutter is in motion and when it is desired to change from color projection to monochrome projection or vice versa.

121776

H. Pedersen K/44

**An Imbibition Screen-Plate Color Process.** This is a method of printing color transparencies. A transparent base is covered with a screen of not too small meshes of waterproof colors. On this screen is placed a sufficiently thick gelatino-bromide color sensitive film having white pigment incorporated in it. An exposure is made through the transparency or in the camera and the image is developed in a non-tanning developer and fixed.

The silver deposit is then bleached in one of the bleaching agents which differentially tan the gelatine in proportion to the silver and is fixed, and the gelatine which has remained soluble is now dissolved by warm water. The remaining white pigment in the gelatine coating is thus distributed in the proportion required in the screen picture. On a red spot, for instance, only the red parts are covered with pigment; the others are uncovered. At a black part the whole screen is free; at a white part all the screen is covered.

After this the pigment layer is pressed onto a colorless gelatine layer containing a solvent for the colors of the screen itself. This solvent penetrates through the pigment and causes the colors of the screen to dissolve and penetrate into the white pigment. The colors not covered by the pigment pass into and are wholly absorbed by the gelatine layer which is pressed onto the screen. On separating the two layers the white pigment will be found to be changed to a color picture of a correct density according to the differential thickness of the layer. By double transfer the pigment can be withdrawn from the screen and applied to a paper backing, thus giving a color picture on the back.

121526

H. Workman 2152

**Photographic Cameras.** In roll film cameras having mechanism for automatically winding the film and setting and releasing the shutter, mechanism is provided for pressing the film against a transparent plate in the focal plane during exposure. The camera may be used on aircraft, and the mechanism may be driven continuously by any convenient source of power to take a series of photographs at regular intervals or may be stopped automatically after each exposure and released manually for the next exposure.

121583

N. Stefani 268

**Photographic Exposure Meters.** The appliance used consists of a strip of film having a non-tinted translucent portion for focusing, and a series of zones of increasing opacity each marked with the exposure required when the particular zone just obscures the image produced by the camera lens.

121577

R. Dubois 286

**Printing Frames.** In apparatus of the vertical-cylinder type, the downward movement of the light-source is determined by means of an anchor escapement controlled by a pendulum, the rate of swing of which is adjustable by moving the weight along its stem. The cable supporting the light-source passes around a free grooved pulley wheel mounted on the spindle of the escapement wheel and the light-source can thus be quickly raised by pulling down the balancing weight.

121755

R. Hodges and J. M. Hodges 3209

**Cinematograph Apparatus.** In a cinematograph projector, a shutter is held out of the light beam during projection by a detent which is withdrawn to release the shutter, and permit it to cut off the light, when the film breaks or runs but or the speed of the mechanism falls. A switch in the circuit of the driving motor may be opened simultaneously.

# Monthly ABSTRACT Bulletin



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# Monthly Abstract Bulletin

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May, 1919



T. F. C. *[signature]*  
document

## Errata

In the *Abstract Bulletin* for April, 1919, on page 73, line 28, instead of *absorbition* read *absorption*; and on page 76, line 13, instead of *E. Cnals*, read *E. Canals*.

## Photography

### Mechanism of Light on Photographic Plates; New Theory of the De- velopment of the Latent Image

A. M. Chanoz 0.17

Chem. Abst., 1919, p. 541

Three phases of the action of the developing bath are distinguished: (1) penetration, in which the developer reaches the silver bromide grains; (2) reduction, corresponding to the principal reactions which give metallic silver; (3) precipitation, answering to the appearance of silver in grains of visible size, and their growth. The developer dissolves and ionizes the silver bromide grains only partly altered by the light, and discharges the silver ions by the electrons of the solution, thus producing metallic silver which remains in colloidal solution. The fully exposed silver bromide grains act as condensation nuclei, precipitate the colloidal silver upon themselves, and thus give the black silver aggregates of the image. These aggregates may attain a volume which is independent of the exposure the plate has received.

[The theory advanced is not new, but in essentials a resumé of development work in "The Theory of Photographic Processes" by Sheppard & Mees.]

### Color Transparencies from Color-Sensation Negatives

F. E. Ives K43

B. J. Col. Sup., 1919, p. 9

The British Patent Specification describing a two-color subtractive process designed for motion pictures. The two color images are both embodied in a single gelatine layer. A blue-green positive image printed from the red filter negative is first produced, the gelatine film is then sensitized with bichromate and a print made in registration with it from the green filter negative by the pinatype method. Preferably a copper toned image, intensified by mordanted fuchsine, is used when printing the pinatype image because it facilitates registration of the image in the printer. The dye chosen for producing the pinatype image is fast red.

### Decennia Practica—Color Photography

K/53

B. J. Col. Sup., 1919, p. 11

Pseudo-Color Processes. Photography in Colors by Prismatic Dispersion.

### Finishing of Bromide Prints

E 046

B. J., 1919, p. 146

A report on a demonstration given before the Royal Photographic Society by Mr. Newman F. Horne of his method of working up bromide enlargements by the powder process.

### How to Prepare Photographic Solutions

J. I. Crabtree G1

Mot. Pict. News, March, 1919, pp. 1691, 1844, 2002, 2171, 2343

An exhaustive article describing in detail the methods of preparing photographic solutions as practised in the Research Laboratory. The author gives preference to

the metric system of weights and measures and indicates with examples the particular advantage of this system in photography although full tables of conversion to the *avoirdupois* system are given. A solution of a definite percentage strength, say 5 % solution, is arbitrarily defined as one such that 100 cc. of solution contain 5 grams or 5 cc. of the chemical. The several chapters deal with dissolving chemicals, filtering solutions, preparing developing and fixing baths, the substitution of chemicals and the storage of solutions. The chapters on developing and fixing bath troubles are particularly instructive.

Purple Tones on Bromide Paper by  
Redevelopment in Daylight

E. Manley J83

B. J., 1919, p. 128

Supplements information given in B. J., Feb. 7, stating that tones from red to purple black can be obtained by bleaching in daylight, permitting the images to print out in wash water, and redeveloping in dilute M. Q. or either of the following:

I	Metol . . . . .	45 grains
	Sodium Sulfit, cryst. . . . .	130 "
	Sodium Carbonate, cryst. . . . .	270 "
	Water . . . . .	10 oz.
II A	Hydroquinone . . . . .	170 grains
	Potassium Metabisulfit . . . . .	90 "
	Potassium Bromide . . . . .	20 "
	Water . . . . .	10 oz.
B	Ammonium Carbonate . . . . .	1 oz.
	Water . . . . .	10 "

Alternatives for the ferricyanide-bromide bleaching bath are given; also a table showing resultant tones of combinations of the bleach baths and developers.

The Practical Use of the Wheatstone Stereoscope

H. C. Snook

Amer. Jour. Roent., Jan., 1919, p. 39

The necessary conditions are described for obtaining stereoscopic X-ray negatives and for viewing them correctly in the Wheatstone Stereoscope.

Film Used Instead of Plates for Army X-Ray Photography

X12

Bull. Phot., March, 1919, p. 282

The Surgeon General has directed that Army hospitals in the U. S. adopt X-ray film instead of X-ray plates.

Practicus in the Studio

0312

B. J., 1919, p. 156

About the Reception Room.

The Use of Time-separated Exposures of

F. P. Liesegang

043

Moving Scenes as Part-Pictures for the Stereoscope

Cent. Z. Opt. Mech., Nov., 1918, p. 306

A discussion of the stereoscopic effect produced by viewing nearly identical cinematograph prints side by side, the one being displaced an exposure or two with respect

to the other. The author points out that since the effect is dependent on direction of motion of the subject with respect to the direction of displacement of the film, no true stereoscopic effect is produced except where the complete subject moves in a continuous direction or, what is the same thing, where the camera is moved past still life.

Aerial Photography 083

Phot. Rev., Feb., 1919, p. 1

A fully illustrated article showing the value of aerial photography in warfare.

A New Photographic Transfer Process /66

B. J., 1919, p. 127

Account of demonstration given before the Royal Photographic Society by Mr. Middleton of a new stripping bromide paper introduced by the Kerotype Co. (see British Patent 12,091, 1915). The support is translucent waxed paper which permits of printing being done through it. Three speeds are supplied, rapid bromide, slow bromide and gaslight.

Making the Apprentice Efficient 217

Studio Light, March, 1919, p. 4

This chapter deals with copying.

The British Achievement in Aeroplane Cameras 219

B. J., 1919, p. 139

Gives a description of the A, C, E, L, LB and F types of camera.

Photographic Enlarging Apparatus W. Kiesewetter 222

Cent. Z. Opt. Mech., Nov., 1918, p. 314

A summary for amateurs of various types of enlarging apparatus and their manipulation. (No new ideas.)

The Efficiency of the Focal-plane Shutter 2624

B. J., 1919, p. 123

Shows that the efficiency depends upon the constants; relative lens aperture, width of slit, distance of blind from plate. Formulæ are given.

Improvement in Lenses for Aerial Photography 2634

B. J., 1919, p. 133

A paper given before the Royal Photographic Society by Mr. W. B. Appleton, dealing with the performance of the Cooke Aviar lens. A paper was also given by Mr. Hasselkuss of Messrs. Ross, Ltd., on the modifications made in the Xpres lens for use in aerial work.

Practicus in the Studio. Postcard Studio 27

B. J., 1919, p. 125

Discusses premises, studio lighting, camera and lens, dark-room equipment and many details peculiar to this class of work.

Photography of Speech and the Reproduction of Sound with the Aid of Photography L. Ancel 319

Bull. Soc. Franç. Phot., Nov., 1918, p. 41

A general review of the subject including a full description of the apparatus of Marage which consists essentially of a photograph with a mirror fitted to the vibrating diaphragm which reflects a beam of light onto a moving band of film or bromide paper.

Electricity and Photography in Warfare H. Moss

B. J., 1919, p. 113

A reprint from "Electrical Review" describing the electrical installation used by the photographic section of the Royal Air Force.

The Optical Society

B. J., 1919, p. 148

A brief account of Major C. W. Gamble's lecture dealing with the photographic methods and apparatus employed by the Royal Air Force during the war.

A Reduction in Plate Prices

B. J., 1919, p. 149

The price of quarter plates is reduced from three shillings and eightpence to three shillings per dozen and other sizes on this basis.

Eastman Film is Now Edge-Numbered

Mov. Piet. World, March, 1919, p. 1813

All Eastman negative perforated motion picture film is now supplied (without extra cost) with consecutive edge numbers one foot apart which appear on development on the opposite edge from the words "Eastman Kodak". By a simple change in the printing machine, which is accomplished by cutting a slit 5/64ths of an inch wide on the left side of the aperture plate, the measuring numbers can be printed and made to appear on the edge of the finished positive. The figures will run from 0 to 99999 before being duplicated.

The advantage of this system is seen in the final cutting and assembling of the finished film. Previously if it was desired to cut out a certain section, the negative was compared with marks placed on the positive indicating the portion to be cut out and during this process of handling the negative was liable to become scratched. The new system cheapens and simplifies the cutting and assembling and does away with the possibility of selecting the wrong scene.

Cost Finding in Photo-engraving A. J. Newton

Photo-Engravers' Bulletin, March, 1919, p. 5

A description of the methods followed to find the cost of the engravings made in the Eastman Kodak Company's Engraving Department. The Engravers Trade Union have engaged a cost accountant to devise a standard scheme of cost keeping for the industry, the employers co-operating.

Mounting of Printing Plates

Photo-Engravers' Bulletin, March, 1919, p. 15

An article pointing out the many disadvantages of wood as a mounting material and suggesting substitutes.

**Biography of Louis E. Levy**

Photo-Engravers' Bulletin, March, 1919, p. 43

Mr. Levy, who was one of the pioneers of photo-engraving, died on February 16, 1919, and an account of his many activities is given.

**The Ben Day Process**

S. A. Kimber

Printing Art, March, 1919, p. 31

Description with examples of this method of using shading mediums.

**Making Offset Plates**

J. A. Heppes

Printing Art, March, 1919, p. 50

In addition to ordinary methods suggests that .005" copper should be engraved and transfers taken from this direct onto the grained zinc plate.

**How Playing Cards are Made**

R. F. Salade

Amer. Printer, March 5, 1919, p. 25

Describes the engraving, printing and polishing of playing cards.

**Waterproof Cement for Broken Graduates**

S. H. Horgan

Inland Printer, March, 1919, p. 655

Recommends bichromated fish glue, the engravers' ordinary enamel solution.

**Acid Penetrating Resist when Line Etching**

S. H. Horgan

Inland Printer, March, 1919, p. 856

Said to be prevented if acid resist ink is applied with leather roller followed by composition roller.

**The Buying of Photo-engravings**

Photo-Engravers' Bulletin, March, 1919, p. 8

A discussion on the one hand of a purchaser who describes the various ways in which the engraver's charges can be minimized, and on the other hand of an engraver who appeals for fairness and confidence in the engraver.

**Ink Distribution on Platen Presses**

G. Turner

Amer. Printer, March 20, 1919, p. 25

Shows importance of correct distribution and the means to obtain it.

**Motion Picture Advertising for Printers**

Amer. Printer, April 5, 1919, p. 32

Suggests that printers should make slides to advertise their business in the moving picture theaters.

Announcement is made of the death on March 4 of Mr. Welborne Piper, for many years an important member of the B. J. staff.

## Physics

- Determination of Field of View and Magnification in Galilean Telescopes W. Zschokke  
Cent. Z. Opt. Mech., Oct., 1918, p. 285

The eye is replaced by a suitable objective and photographic plate. The pupillary opening is duplicated by a diaphragm with adjustable aperture.

- Reflecting Prisms T. Y. Baker  
Sci. Amer. Sup., March 15, 1919, p. 172  
Their use in place of mirrors and the geometry of various forms.

- Perspective, and Perspective Distortion R. B.  
Cent. Z. Opt. Mech., Oct., 1918, p. 296

The writer points out the distortion of perspective which results particularly in photographs taken with wide angle lenses. He shows this to be due to the fact that the usual distance at which the print is held does not reproduce for the eye the perspective center of the photographic lens system.

- Report of the 1917-18 Committee on Automobile Headlight Specifications  
Trans. Ill. Eng. Soc., March, 1919, p. 64

The committee reports a series of experiments, made out of doors and at night, in order to determine the minimum lighting which will permit a driver to see an object at safe distances, and the maximum permissible without the blinding glare.

- Present Status of Industrial Lighting Codes G. H. Stickney  
Proc. Amer. Inst. Elec. Eng., April, 1919, p. 611

In order to protect workers from accident and eye-strain, industrial lighting codes have been adopted in four states and in Federal establishments. Similar action is under consideration in several other states and there is prospect of extension throughout the country. Investigation and experience indicate the need of government regulation of factory lighting.

- Emission and Absorption in the Infra-Red Spectra of Mercury, Zinc and Cadmium R. C. Dearle  
Proc. Roy. Soc., Feb., 1919, p. 280

The spectra were studied photographically to 8300 A. U. and by means of a linear thermopile and rock salt spectrometer. The source of light was a mercury amalgam lamp, rich in lines in the region studied. The bearing of the results on the Bohr theory of atomic structure is discussed, the writer being of the opinion that the theory will have to be extended to account for the phenomena observed in the study of an atom containing a very large number of electrons.

An Investigation of Extreme Ultra-  
Violet Spectra, with a Vacuum  
Grating Spectroscope

J. C. McLennan and  
R. J. Lang

Proc. Roy. Soc., Feb., 1919, p. 258

Gives preliminary observations made with a new vacuum grating spectrograph having 20,000 lines per inch and 120 cm. radius. The investigation shows that wavelengths as short as 584 A. U. can be studied with ease.

Spectrum of mercury	.	.	measured to 1435 A. U.
" " iron	.	.	" " 1427 A. U.
" " copper	.	.	" " 1925 A. U.
" " carbon	.	.	" " 584 A. U.

On the Absorption Spectra and the Ioniza-  
tion Potentials of Calcium, Strontium  
and Barium

J. C. McLennan and  
J. F. T. Young

Proc. Roy. Soc., Feb., 1919, p. 273

The spectrograms were made with a quartz spectrograph having a range from 8000 A. U. to 2000 A. U. Quartz absorption tubes could not be used as they were attacked by the hot metallic vapors. A special type of arc lamp was designed which gave the desired results. Several new lines in the series  $nu = (1.5, S)-(m, P)$  were found. The lines found add to the evidence that ionization potentials are given by the quantum relation,  $Ve = h.nu$ .

Some Generalized Forms of an Optical Equation

T. Smith

Trans. Opt. Soc., Nov., 1918, p. 23

It is shown how to trace rays through an optical system by means of a generalized form of the reciprocal relation for axial pencils. Advantage so claimed in studying eye-pieces. Examples are worked out.

On Protection in Diagnostic Work. A Con-  
sideration of the Effects of Scattered  
Rays and Secondary Rays

F. H. Johnson

Arch. Rad. Electrotherapy, Feb., 1919, p. 290

The X-ray tube should be entirely enclosed in a box opaque to X-rays. The observer should be protected from scattered radiation by lead panels, partitions, and lead rubber. Soft secondary radiation is a danger from metal articles worn close to the body.

The Decrease in Ultra-Violet and Total Radiation  
with Usage of Quartz Mercury Vapor Lamps

W. W. Coblenz,  
M. B. Long and  
H. Kahler

Sci. Papers Bur. Stand. No. 330

A radiometric method for determining quantitatively the decrease in intensity of the ultra-violet and total radiation with usage of quartz mercury vapor lamps is described. Experimental data on this decrease are given.

### The Visibility of Airplanes

M. Luckiesh

J. Frank. Inst., March, 1919, p. 289

This paper, which will be continued, recounts preliminary work in measuring the relative brightness of the sky and of clouds, fields, wood and water, and in determining the comparative illuminations given, under different circumstances, by the sun and the sky. Many observations were made from the air, and consisted in comparing the brightness of the earth beneath with that of a white diffusing surface receiving the same illumination. These results are expressed as a ratio, whose variation shows the effects of varying altitude and varying atmospheric conditions. The different backgrounds against which an airplane may be observed, from above and below, make its successful camouflage difficult. To determine the requirements for this camouflage was the purpose of the investigation.

### The 72-inch Reflecting Telescope of the Dominion Observatory

Popular Astronomy, April, 1919, p. 210

An account of the construction and erection of a 72-inch reflecting telescope to be used chiefly for the purpose of obtaining radial velocities of the fainter stars. The large mirror is  $73\frac{1}{2}$  inches in diameter, 13 inches thick and weighs nearly 5,000 pounds, the focal length of the mirror is 30 feet and when used in the Cassegrain form has a focal length of 108 feet. The entire surface has been corrected to within a quarter-wave (one two-hundred thousandth of an inch). The single prism spectrograph used for obtaining the spectra of the stars has a linear dispersion of about 35 Å per mm. and gives excellent spectra of 8.0 magnitude stars in the very short time of 25 minutes. The design and mechanical construction have proved practically perfect, and important data relative to the fainter stars will soon be forthcoming.

## General and Inorganic Chemistry

### The Structure of Radio-active Elements

I. W. D. Hackh

Phys. Rev., March, 1919, p. 165

This paper proposes an arrangement of valence electrons and helium nuclei for the atoms of radio-active elements. It goes further than other theories in giving a structure for the outer part of the nucleus, where the alpha particles are located. The diagrams show the author's interpretation of the periodic system of valence, of isotopes, and of the radio-active transformations.

### A New Process for the Production of Zinc Coatings

M. V. Schorp

Cent. Z. Opt. Mech., Oct., 1918, p. 295

A powder of zinc or other metal is carried in a blast of hot air to the surface to be covered. The hot gas serves not only as carrier but especially as a successful and uniform heating device for rendering the metal plastic.

### The Arrangement of Electrons in Atoms and Molecules

I. Langmuir

J. Frank. Inst., March, 1919, p. 359

This is an abstract of a paper to appear in the Journal of the American Chemical Society. It presents a hypothetical arrangement, characterized by concentric spherical shells, for electrons in all atoms. The explanation of valence and of physical properties, including ferro-magnetism, is to follow from this hypothesis, which

demands a magneton, or an electron capable of producing a magnetic field. (The construction of such systems as this is no doubt a fascinating occupation.)

Fluorescence—I

J. Perrin

Sci. Amer. Sup., March 15, 1919, p. 162

The Phenomenon of "Optimum" Fluorescence in relation to Molecular Transformation.

Chemical Affinity in Crystals and the Velocity of Crystallization

M. Paçoa

J. Chem. Soc., 1919, p. ii. 51

The general conclusions drawn are: (1) the velocity of crystallization is a constitutive property, and (2) the bonds between the atoms in crystalline networks are of the same nature as chemical valencies.

Optical Researches on the Constitution of Sulfurous Acid, Its Salts and Esters

K. Schaefer

J. Chem. Soc., 1919, p. ii. 38, from Z. anorg. Chem., 1918, 104, p. 212

The view is expressed that the bivalent sulfite ion has a symmetrical constitution, and hence also the normal sulfites.

Radium Production

C. H. Viol

Science, March 7, 1919, p. 227

A note regarding the production of radium in the United States to date and also a discussion of the use of mesothorium as a substitute for radium both for medical purposes and in luminous compounds.

Airplane Fuel

Science, March 28, 1919, p. 302

Note regarding the production of a better fuel for this class of work and a discussion of some results already obtained.

An Easy Method of Silvering Mirrors

J. Graham

B. J., 1919, p. 155

STOCK SILVER

A Silver Nitrate . . . . .	3 gms.
Distilled Water . . . . .	300 cc.

STOCK FORMALIN

B Formalin . . . . .	45 gms.
Distilled Water . . . . .	450 cc.
Methyl Violet Dye . . . . .	1 gm.

To silver 20 sq. inches take 90 cc. A., add slowly 10 % ammonia until precipitate first formed redissolves, add 11 cc. of B., and immediately pour into tray containing the glass or celluloid to be silvered. The glass must, before silvering, be rubbed with the following priming solution and rinsed:

Stannous Chloride . . . . .	1 gm.
Water . . . . .	200 cc.

If the surface of the mirror is to be used it may be burnished after drying with a chamois skin pad and rouge. Celluloid varnish is recommended as a protective coating.

## Colloid Chemistry

### The Brownian Movement in Relation to the Mechanism of Flocculation

D. J. Hissink

Chem. Weekblad, 1919, 16, p. 20

The author disputes the contention of Henri and Ostwald ("Grundriss der allgemeinen Chemie," 1917, p. 544) that the Brownian movements are diminished by addition of a coagulating electrolyte before coagulation, and contends that by microscopic observation it can easily be seen that the coagulation itself is the cause of the diminution of the movement, which is therefore a consequence of the coagulation and does not precede it.

### The Multarotation of Gelatin and its Significance in Gelation

C. R. Smith

J. Amer. Chem. Soc., 1919, p. 135

From studies of the effect of temperature on the multarotation of gelatin solutions the author concludes that "there probably exist two forms of gelatin, one, which has been designated sol form A, stable above 33° to 35°, and the other, the gel form B, stable below 15°". He develops a formula for what he believes to be a bimolecular reaction, with an equilibrium thermally reversible between these limits. Increase in levorotation parallels increase in viscosity, and is held to indicate increasing formation of gel form B. Gelatin sols dried above 35° and gels dried below 15° give different solid forms.

### The Color of Water

W. D. Bancroft

J. Frank. Inst., March, 1919, p. 249

This paper, which is to be continued, recounts studies made by Tyndall and Aitkin of the color of pure water and of the water of different parts of the Atlantic, the Mediterranean and several European lakes. Water itself is a blue transparent liquid. The various hues of natural water depend on the amount of color of the suspended particles. Pure water, if very deep, would appear black. With white particles in suspension the color varies from blue to milky white as the amount of matter increases. Clear water is never yellow, but may appear green on account of the presence of yellow particles.

### Absorption of Water by Gelatine

E. B. Shreve

J. Frank. Inst., March, 1919, p. 319

This paper presents the results of an extended study of the rate of imbibition of water by gelatine, and the effects upon this rate of changes of temperature and of the substitution of various salt solutions for pure water. It appears that, though the process of absorption is exothermic, the rate is increased by rise of temperature. Also, though some salt solutions show less absorption than pure water, and some more, yet if the salt is made up into the gelatine, and the mixture allowed to absorb water, then the absorption is increased by any salt of either group.

The Eastman Kodak Company is now manufacturing pure monomethyl-*paraminophenol* sulfate and supplying the same under the trade name of "Elon".

## Organic Chemistry

### Oxidation of Organic Compounds by Silver Oxide

R. Behrend and K. Dreyer

Ann. Chem., 1918, 416, p. 203

An investigation of the relation between the constitutions of substances and their tendency to oxidation and the nature and quantity of the products of oxidation.

### Aromatic Derivatives of Orthosulfurous Acid

M. M. Richter

Ann. Chem., 1918, 416, p. 291

Triphenylorthosulfurous acid is amphoteric in character. Its ethyl ester and chloride, sulfate, etc., are described. Several similar derivatives and their sulfates, etc., are also described.

### Classification of Organic Coloring Matters

M. Dominikiewicz

J. Chem. Soc., 1919, p. i. 86,

from Chem. Zeit., 1918, 42, pp. 549, 562

In the method of classification proposed, the substances are arranged under chief types depending on the constitution of the nucleus, these types being subdivided into classes. The types include the quinone type, the diphenylmethane type, the saffranine type, the indigo type, etc. Sulfur derivatives and substances of unknown constitution form two separate classes.

### Note Concerning the Manufacture of Sulfonic Acids

D. F. Houston

Science, March 4, 1919, p. 265

A note regarding a new process of manufacturing certain sulfonic acids. The process refers particularly to the sulfonation in the vapor phase of benzene, naphthalene and other hydrocarbons. The Department of Agriculture offers to assist manufacturers who wish to produce these compounds.

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## Books

### Recent accession to the Library:

#### How to Make Lantern Slides

F. R. Fraprie

Amer. Phot. Pub. Co., Boston, Mass.

In addition to the usual method of procedure, instructions are given for working in collodion and carbon. The chapters on intensification and reduction are very complete, but very little information is given on the coloring of slides.

## Patent Abstracts

### U. S. Patents

1293040

C. J. Coleman K/2

Motion Picture Film for Color Projection in which the various color selection pictures may be arranged in any usual way upon one surface of the film, and upon the opposite surface of the support is a transparent coating with colored portions opposite the different color selection pictures.

1291954

N. H. Losey K31 K32

Apparatus for Taking and Projecting two Simultaneous Views of the Same Object. The film passes through the apparatus horizontally and one set of views is produced upon the adjacent half. One of the lens components is colored, but these components may be removed and pictures projected which are themselves colored. It is intended that the spectators will wear spectacles, the glasses of which are differently colored.

1293323

A. W. Buck X423

A Package containing Individual X-Ray Dental Films. The package consists of a front sheet of celluloid and a rear sheet of metal bound around the edges of the film and the celluloid. The container as a whole is placed in the patient's mouth and roentgenograms of the teeth made thereon.

1295062

F. C. Reynolds 2103-264

A Camera in which the lens board is adjustable for focusing purposes and carries a finder, the inclination of which is changed as the lens board is adjusted. It is stated that the inclination of the finder will be such that when the camera is held horizontally the finder will be centered upon the base of an object with which the camera is in focus.

1293033

215

J. Cernohouz. Assigned to Burke & James, Inc.

A Roll Film Camera in which the spool centers are advanced or retracted by a common operating lever which also actuates a spring to expel the spool when the spool centers are retracted. It can be operated only when the camera back is removed.

1293150

G. J. MacDowell 215

A Roll Film Camera with a removable back which carries a bowed spring which presses the edges of the film against a flange to hold the film flat in the focal plane.

1294821

R. A. Moore 215

A Camera in which roll film is used, the winding reel having a drum exteriorly of the casing with a cord wound thereon. By pulling the cord, the film is advanced for another exposure. The cord is rewound by a spring.

1294046 C. H. Chase 2155

A Camera intended particularly for Panoramic Views. A strip of roll film may be extended around the sides and rear of the camera. The sides are connected with the body of the camera by bellows and may be swung out at an inclination, so that pictures may be taken upon the film in each of the sides and the rear by swinging the lens. Adjustable partitions are provided, separating these portions of the film so that the exposures may be made independently without fear of fogging the portions of the film not exposed.

1293479 F. C. V. Laws 219-2652

A Magazine Camera intended for use upon aircraft, in which the manual operation of the cable release operates the shutter and moves a mutilated gear so that it will be driven from an air screw to bring the next plate to exposure position; or the movement of a crank handle performs the whole operation.

1293864 W. B. Morton 219

A Camera with a Foldable Bed and the back of which is adjustable, so that its dimensions may be reduced in two directions.

1294705 W. A. Riddell. Assigned to E. K. Co. 219

A Camera with a Rising and Falling Front. The lens board adapted to co-operate with a rack on the supporting frame and a finger piece adapted to engage and disengage these parts to hold the lens at the desired adjustment.

1294676 J. M. Kirby 228

Stereopticon Carrying a Disk with a series of transparencies which are moved into exposure position by a motor, which in turn may be governed by a phonograph so as to be correctly timed. A fan is supplied for ventilating the casing.

1291897 W. C. Huebner 248

Apparatus for Positioning the Printing Plates on the plate holders of photographic printing apparatus, mainly for use in photo-lithography.

1294429 P. E. Edelman 2542

Method of and Apparatus for Developing Photographic Films, particularly films in a film pack. The tabs connected to the individual films of the pack are not torn off, as in the present practice, but are left on the pack. The free end of one tab is attached to the base of the next tab and these thus form a continuous backing strip by which the films attached thereto may be wound upon the apron of a developing tank. In the tank shown there are two marginal bands which contact the marginal areas of the films, thus separating them.

1291826 J. L. Garretson. Assigned to H. F. Waite 258

Apparatus for Drying Dental Film. Clips are placed upon the blades of a revolving fan, the individual films are held in place and dried.

- 1292901 B. Smith. Assigned  $\frac{1}{2}$  to W. M. Houghton 263

An Attachment for Cameras for Producing distorted Photographs. It consists of a lens system comprising a plus cylindrical convex lens and a minus cylindrical concave lens. The angular relation and the spacing of these lenses may be adjusted to give different effects.

- 1293149 G. J. MacDowell 264

A Finder of the usual Reflecting Type with Two Lenses. The upper lens carries a revolvable mask with raised edges that shade the field of the finder.

- 1293039 H. T. Clarke. Assigned to E. K. Co. 2661

A Photographic Filter comprising a sheet covered with sodium glucosphenylosazone-p-p'-dicarboxylate. This dye has sharp cut absorption in the blue-violet region of the spectrum and a sustained absorption in the ultra-violet and is resistant to fading.

- 1294079 W. Fetz 287

A Film Stretching Frame for holding film taut during exposure. The opposite edges of the film are engaged by clamps upon two frame members which bear relation to each other somewhat like a toggle joint. When they are pressed flat, the film is held taut in the frame.

- 1291820 W. F. Folmer. Assigned to E. K. Co. 29

A Dark Box for Storing and Carrying Photographic Plates and Films. The cover consists of a series of flexible metallic sheets of progressively increasing length when extended, so that the door as a whole moves readily when slid toward the curved end of the container.

- 1294379 C. F. Bellemere 29

A Hanger for Films for Use in Tank Development. The film hanger is attached to the cover of the tank and comprises two supporting wires having corrugated portions. The wires are thrust through the ends of the film to be treated and each film hangs from a separate corrugation.

- 1293678 W. E. Bond 242

A Printing Frame having a Hinged Back upon one part of which a spring is pivoted at its middle point, as is common. Upon the other part two separate springs are individually pivoted, so that each may be swung independently into engagement with the wall of the frame.

- 1293741 R. J. Emory. 3103

Assigned to Baird Motion Picture Machine Company

Shutter Mechanism for Motion Picture Machines in which the shutter blades may be readily adjusted with respect to the light aperture without disturbing the shutter shaft. In focusing, the shutter is moved with the lens.

1292149 G. J. Teague 319

A Means for Producing Animated Cartoons, in which the cartoons are drawn in a series of pictures upon a long roll of paper and the roll is passed before a camera which takes the various pictures successively.

1293203 D. O. Royster 319

An Apparatus for Taking Motion Pictures and Sound Records Simultaneously. Upon the stage, where the drama is enacted, a telephone receiver is placed which transmits the sounds to the sound recording device positioned at the camera. By means of fans a current of air is blown from the floor of the stage through the ceiling where the telephone transmitter is located, this being said to facilitate the transmission of sound.

1294686 L. McCormick 319

Apparatus for taking Two Motion Pictures simultaneously of adjacent fields or portions of the scene which are separated by a distinctive object of considerable size common to both pictures.

1295081 G. G. B. Tartara 319

A Camera for Taking Motion Pictures or ordinary photographs upon motion picture film. It may be operated manually or automatically by clock work. It is provided with a brake for regulating the speed of the shutter and the feeding of the film and has a counter showing the number of exposures made.

1291793 F. H. Doyle and J. Wallace. 32  
Assigned to Safety-graph Educational Film Co. Inc.

A Projector in which the carbons for the arc light are readily adjustable. A rheostat is mounted before the door in a convenient position.

1292448 E. J. Emory. 32  
Assigned to Baird Motion Picture Machine Co.

A Motion Picture Projector in which the various parts are made up in units which are readily assembled or taken apart.

1293128 L. B. Larsen, O. J. Holmes and H. G. Larsen. 32  
Assigned to Acme Motion Picture Projector Co.

A Motion Picture Projector in which special provision is made for the framing and adjustment of the pictures with relation to the light aperture, without any change in the proper relation of the auxiliary mechanisms of the machine.

1293553 A. C. Roebuck 320

A Support for a Motion Picture Projector in which special provision is made for the adjusting mechanism, so that the angle of the machine as a whole may be accurately adjusted.

1292798

O. E. Kellum 323

Synchronizing Apparatus for Moving Picture Film and Phonograph Records, in which the number of revolutions of the film and of the phonograph record is accurately counted. The phonograph record, by electrical control, keeps the film in proper synchronism. A special needle is provided on the phonograph so that when it is necessary to turn the phonograph record back to produce proper registration, the recording needle will be kept in the proper groove.

1293380

E. R. Dugan 324

A Projection Screen Made of a Plate of Glass, the front surface of which is etched or marked with striations which increase in coarseness from the center toward the edge of the frame. The back surface of the frame has a metallic coating.

1293433

W. K. Hill 324

A Projection Screen Made of Fabric and covered with a coat of sizing, several coats of paint and then with an adhesive coat to which has been added white zinc to produce a china glass or enamel finish. To this coat, before it is dry, is added a covering of finely pulverized glass, quartz or other crystalline materials and the final finishing coat of white zinc is then spread on in the form of dry powder to fill in interstices.

1294172

H. A. Rogers 326

An Apparatus for Exhibiting Motion Picture Records in Stereoscopic Relief. A transparent or opaque picture record may be used having two series of pictures side by side, which are projected either by reflected or transmitted light upon a ground glass screen within the case carrying the mechanism. The observer views the pictures projected upon the ground glass through two lenses provided for that purpose in the wall of the casing.

1291524

A. S. Howell. Assigned to Bell &amp; Howell Co. 33

An Apparatus for Perforating the Margins of Motion Picture Film, in which all of the functions are performed automatically. Special provision is made for a holder and stripper that is adapted to retain the film during the punching operation and co-operate in the removal of the same from the dies immediately thereafter.

1293086

C. Graf. Assigned to Graf Lens Corporation 3639

A Lens stated to be particularly adapted for Motion Picture Projectors and working at F 2.5. It is a triple cemented lens comprising a central bi-convex element of low refraction with similar negative concavo-convex outer elements of high refraction.

1290786

C. W. Saalburg 07004

Method of producing Etched Intaglio Printing Surfaces consisting of making the usual image negative in carbon tissue and superposing on it another tissue containing a grain.

1290603

W. J. Logan 07006

An Automatic Machine for powdering plates to be etched in order to protect the sides of the lines.

## British Patents

122134

H. Dalziel K

Method of Insuring the Correct Registration of photographically prepared blocks for multicolored printing by means of test prints on tracing paper indicating the position of the registering pins.

121936

S. H. Morse J-9

Apparatus for Drying Prints. Well known type of heated drum and endless apron.

122780

K. G. Goring Campion X4

X-Ray Directors. One form consists of a rod of wood or other material bearing adjustable fingers or pointers which can be centered with the diaphragm and target of the tube. The device is attached to the tube holder. Another form is designed to be mounted on a carrier attached to the cylindrical diaphragm.

122018

H. A. Gill 215—2106

Photographic Cameras. A folding roll-film camera provided with a ground-glass focusing-screen is so arranged that different lengths of film may be exposed, the exposed portion being, in each case, arranged in the middle of the field. Roll holders containing respectively the used and unused portions of the film, are mounted on carriages, which normally occupy positions in the bottom of the camera case. When it is desired to bring a portion of the film into the exposure position, the carriages are moved vertically into their required positions by means of a rod protruding from the top of the camera. During the first stages of this movement the carriages are held together by a spring catch, but, when the lower carriage has reached the required position, the catch is released by engagement with a projection on a vertical bar. The carriage continues its upward movement until it is stopped either by the top of the camera case or by a projection on the bar. In order to enable different lengths of films to be exposed, the bar has three vertical webs or flanges, each of which is provided with means for determining the positions assumed by the carriages. By turning the bar by means of a knurled head the camera may be set to expose the maximum area of film or only one-third or two-thirds of the maximum area.

122151

H. A. Gill 219

Photographic Cameras. When the lens slide is moved inwards by means of the projections to collapse the bellows, the plate is automatically tilted, thus disengaging the stud from the slide; at the same time, the lever is automatically moved slightly inwards by a spring, thus unlocking the lever from the scale and allowing a spring to restore the lever to its original position.

122371

P. H. Waddell 257

Improvement in Print Washing Apparatus.

120984

J. Trotter 263

A Telescopic Apparatus for measuring the focal length of lenses, spherical cylindrical or prismatic, and for indicating the optical center, the axis of the cylindrical lens or the position of the base of a prismatic lens.

121336

S. H. Morse 29

Photography. A Print-drying Machine of the type comprising an internally heated rotating drum.

122332

R. Deans 3103

Cine Projection Shutter in which the effective apertures are relatively increased in size as the speed of rotation is augmented; two discs of identical outline being operated from the shaft in such wise that one lags behind the other in proportion to the velocity imparted thereto. Thus more light passing at higher speeds, flicker will be decreased.

121874

D. S. B. Shannon 32

Cinematographs. In cinematograph apparatus adapted to display picture-sequences comprising more than one film-set, delay due to the insertion of new sets is avoided by the provision of two projectors having a common lantern and driving mechanism so connected that movement of the lantern from one projector to the other transfers the driving mechanism also.

122202

E. Barnes and B. W. L. Phillips 32

Optical Projection Apparatus devised for the purpose of giving a sharp image at all distances and more particularly intended for use in connection with a specified form of range finder. An electric lamp is employed having a single filament, in combination with a long, narrow slot.

120048

F. W. Barnes. Assigned to Kodak Ltd. 33

Cine Film Notching.

123168

F. B. Thompson 352-358

Developing and Drying Cinematograph Film. An apparatus of the continuous type comprising tanks for the various solutions, wringing rollers, a drying chamber and mechanism for moving the film.

# Monthly ABSTRACT Bulletin



June, 1919

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# Monthly Abstract Bulletin

Vd. 5, No. 6

June, 1919

## Errata

In the *Abstract Bulletin* for April, 1919: On page 78, line 14, instead of *A. Heroe*, read *A. Herve*; on page 78, line 17, instead of *pp. 62, 241, 245*, read *62, p. 241*.

In the *Abstract Bulletin* for May, 1919: On page 87, line 2, instead of *Light* read *Light-Action*, and instead of *0.17*, read *017*; on page 91, line 10, instead of *.005"*, read *0.02"*; on page 91, line 19, instead of *p. 856*, read *p. 656*; on page 91, line 28, instead of *p. 25*, read *p. 20*; on page 91, line 30, insert *C. C. Sherlock* as name of author; on page 94, line 33, instead of *M. V. Schorp*, read *M. U. Schoop*.

## Additions to Numerical Classification

L8 Restoring and Repairing Negatives.  
038 Amateur Finishing.

### 1. Photography

- The Fundamentals of Photography. C. E. K. Mees 015  
Chapter 14. The Reproduction  
of Tone Values in the Print  
Kodakery, May, 1919, p. 18

This article describes the characteristics of printing papers and explains why perfect reproduction in a print is not obtainable.

- A New Process of Printing on S. H. Williams K/42  
Paper in Natural Colors  
Phot. J., 1919, p. 88

The author makes a negative through a banded three-color filter such as the Joly filter. He places this negative in an enlarging lantern and by means of a ruled screen consisting of bands twice the width of the alternating spaces he projects upon successive pieces of bromide paper the set of bands representing the red, green and blue-violet color sensations. These separate bromide prints are then converted into color prints by the Ozobrome process, the Pinatype process, the bleach and dye mordant process, or by the Bromoil transfer process, which the author prefers.

- Two-Color Cinematography K/43 KJ88  
B. J. Col. Sup., 1919, pp. 13, 17

A description of Hamburger's patent (British 123786 of 1915) for the simultaneous dye-toning of opposite sides of double-coated film, the toning being done by means of traveling bands of porous absorbent material charged with a dyeing fluid and applied to the opposite sides of the films.

- Decennia-Practica—Color Photography K/53  
B. J. Col. Sup., 1919, p. 20

Photography in colors by prismatic dispersion.

- Standardization in Sizes of Small Plate Cameras E11—213  
B. J., 1919, p. 220  
(See also editorial comment, p. 214.)

The British Photographic Manufacturers' Association has now decided to adopt the following standard sizes in small plate cameras, and all camera makers are requested to make new models in these sizes in preference to those now current:

NEW SIZE	IN PLACE OF
$4\frac{1}{2} \times 6$ cm. ....	Multitude of small sizes
$6\frac{1}{2} \times 9$ cm. ....	$3\frac{1}{2} \times 2\frac{1}{2}$ in. and $6 \times 9$ cm.
$8 \times 12$ cm. ....	$\frac{1}{4}$ plate and $9 \times 12$ cm.
$10 \times 15$ cm. ....	$5\frac{1}{2} \times 3\frac{1}{2}$ in., $5\frac{1}{2} \times 3\frac{1}{4}$ in., and $9 \times 14$ cm.

(The definite adoption of centimeter sizes by the British manufacturers and the final abolition of the British quarter plate,  $3\frac{1}{2} \times 5\frac{1}{2}$ ,  $3\frac{3}{4} \times 5\frac{1}{2}$ , and  $9 \times 12$  cm. plate obviously requires the co-operation of the continental manufacturers if the  $9 \times 12$  is to be finally abolished, since  $9 \times 12$  cameras are made only to a very small extent in Great Britain and plates cut to that size are made for use in continental cameras.)

### Hints and Suggestions for Use in the Dark-room and Work-room

V. Jobling

Phot. J., 1919, p. 109

Description of a large number of ingenious devices adopted by the author in his ordinary work. He describes his method of making up solutions, of drying plates, printing paper, mounting prints, and binding lantern slides.

### Combined Developer and Fixer for Ferrottype Plates

E. W. G5—163

B. J., 1919, p. 195

The formula is given.

### The Fixation of Bromide Prints

G6

B. J., 1919, p. 198

An editorial review of the article by G. F. Stine from Photo Era. The editor lays stress on the importance of complete fixation and again pleads for the use of the double fixing bath. It is considered that a plain hypo fixing bath is superior to the acid bath, but this could not be used with an acetic acid stop bath, and it would be necessary to add sulfite to it. A better alternative would be the use of a stop bath of bisulfite.

### A Bichromate-Mercury Intensifier

D. Charles H2

B. J., 1919, p. 172

The author bleaches the negative in an acid solution of potassium bichromate as for chromium intensification and then, after washing for a short while, immerses in a mercury iodide solution, finally darkening the bleached image in a sulfide bath or in a hydroquinone developer. This solution is claimed to give very great intensification without staining. (Report No. 661, abstracted in this *Bulletin*, shows that this method of intensification has no advantage over direct intensification with the Eastman Intensifier).

### Bromide Printing—Past and Present

C. B. Barnes J3

B. J., 1919, p. 204

This deals with the quantity production of bromide prints.

- The Finishing of Bromide Prints N. Horne L4  
Phot. J., 1919, p. 129

Describes his method of finishing prints by the powder process, giving full working details.

- Repairing Broken Negatives B. F. Welch L8  
B. J., 1919, p. 235

Gives detailed instructions for making a transparency from a broken negative in such a way to show the minimum defects and then, after retouching, making a new negative of it.

- Definition in X-Ray Photographs A. Lumière X099  
B. J., 1919, p. 183

For testing the definition given by X-ray tubes, the author has used a box containing four openings filled with wire gauze of various degrees of fineness. He finds different tubes to vary very greatly in the definition which they give, the chief factor being the size of the focal spot on the anti-cathode.

- Processes for the Reversal of a Negative or Positive Image G8  
B. J., 1919, p. 201

A general review of the methods which have been proposed for the conversion of a negative image into a positive one.

- Manufacture of X-Ray Screens by the A. Livache X424  
firm of Caplain Saint-André & Son  
Bull. Soc. d'Encouragement pour l'Industrie Nationale,  
Nov.—Dec., 1918, p. 307

Before the beginning of the war the firm of Caplain Saint-André & Son prepared barium platino-cyanide screens and later intensifying screens of calcium tungstate. It is stated that the intensifying screens made by the André firm are superior to the German screens and that they do not show any phosphorescence.

- Practicus in the Studio—Home Portraiture 0313  
B. J., 1919, p. 172

This deals with the equipment for home portraiture and with the considerations as regards light which must be observed in making portraits in sitters' homes. The author uses a  $6\frac{1}{2} \times 8\frac{1}{2}$  parallel bellows camera fitted with a 12" lens carrying six slides filled with plates. For children, a high intensity portrait lens is adapted. The stand is an ordinary three-fold tripod of rather heavy make. A small background, about 4 x 5, fitted on two light rollers is often found useful.

- Getting Good Photographs of Difficult R. B. Lockwood 032  
Mechanical Subjects  
B. J., 1919, p. 217

Discusses the photography of such subjects as polished metal articles and the use of enlarged sections or close-ups in addition to the general view of the machine to be photographed.

**Working for Amateurs****"Thermit" 083**

B. J., 1919, p. 191

A description of British methods of amateur finishing, the scale of the plant described being a fairly small one.

**Making Advertising Plates****045**

Mot. Pict. News, April 19, 1919, p. 2509

A reprint from the Eastman Lantern Slide booklet.

**The Postcard Lantern as an Aid  
to Copying and Enlarging****A. Lockett 057—046**

B. J., 1919, p. 174

The lantern described is the toy lantern used for illuminating postcards in order to project them on a screen. By using this lantern with a photographic lens instead of the usual projection lens, a print to be copied can be inserted at the back of the lantern and focused on a sheet of tracing paper or ground glass and the enlarged image copied by means of a camera on the other side of the tracing paper. This makes it possible for the worker to modify the projected image considerably by working on the ground glass or tracing paper, introducing a background before painting around the projected image or copying joined-up prints or combination prints. Since the projected image from such a lantern is laterally reversed, copying from the rear of the easel gives a correct view of the picture.

**Practicus in the Studio—Copying****057**

B. J., 1919, p. 200

This article emphasizes the necessity of a small special outfit for making copies in the studio and deals also with the choice of plates, correct exposure, and the best method of lighting.

**War Photography****F. Hurley 083**

Australasian Photo-Review, Feb. 15, 1919, p. 164

An account of the author's experiences as official war photographer to the A. I. F. in Flanders.

**Large Anastigmats for Aerial Photography Introduced During the War by Messrs. Aldis Bros.****083—2634**

Phot. J., 1919, p. 122

Although the firm of Aldis Brothers were lens makers before the war, until 1917 their entire time was taken up in the development and manufacture of other optical instruments introduced by them, notably telescopic rifle sights, signal lamps and unit sights for aeroplanes. In 1917 they took up the manufacture of long focus lenses working from the available glass made by Messrs. Chance. They made a 20" lens of  $f/5.6$  which weighed  $5\frac{1}{2}$  lbs.; a 20" lens working at  $f/4$ , covering an  $8 \times 10$  plate and weighing 10 lbs; and a 36" lens working at  $f/6$  covering an  $8 \times 10$  plate and weighing  $16\frac{3}{4}$  lbs., this last lens being used expressly for the photography of Zeebrugge from a height of three miles. The filters for the 36" lens were of  $6\frac{1}{2}$ " diameter. The

paper contains an interesting discussion of the advantages and disadvantages of the telephoto lens, explaining why this firm did not adopt it when ordered to produce long focus lenses.

Improvements in Lenses for Aerial  
Photography

W. B. Appleton 083-2634

Phot. J., 1919, p. 114

This is a statement as to the work done by Taylor, Taylor and Hobson on aerial lenses. They made  $f/4.5$  lenses of  $8\frac{1}{4}$ " and  $10\frac{1}{4}$ " focus for the  $4 \times 5$  plate, and a  $10\frac{1}{2}$ "  $f/6$  lens for the  $7 \times 9$  plate. Great attention was paid to correction for coma, the discussion of which occupies the greater part of the paper.

Development in Photographic  
Lenses for Aircraft

J. Hasselkus 083—2634

Phot. J., 1919, p. 121

Description of the work done by Messrs. Ross, Ltd. This firm modified their Xpres lenses by diminishing the field; whereas the commercial lens was corrected for an angle of  $56^\circ$ , the aircraft lens was corrected for an angle of  $36^\circ$  only, in connection with which the astigmatic aberration was reduced from .5 mm. to .25 mm. in the intermediate zones of the plate. In addition to this a  $f/6$  lens was made containing only two kinds of glass, a light flint and a dense barium crown, these being the most available glasses. In this article also great stress is laid on the importance of correction for coma.

Carbon Prints from Bromides

H. F. Farmer /84

Amat. Phot., April 2, 1919, p. 285

Gives a modified ozobrome formula and detailed instructions for making carbon prints via bromides.

The Merits of Gaslight Papers

J. Hall 136

B. J., 1919, p. 218

Discusses the uses of a considerable variety of gaslight papers, contrasting the advantages and disadvantages which each type shows. The article is unusually frank in respect to the mentioning of the names of specific papers.

Practicus in the Studio—Handling the Studio Camera

211

B. J., 1919, p. 215

This deals with such questions as the extension, focusing, horizontal and vertical movements and repeating back, which make for convenience and rapidity in use.

To make a Wooden Washing and Fixing Tank  
for Portrait Film

254

Studio Light, April, 1919, p. 14

Optical Glass

263

B. J., 1919, p. 189

A reprint from 'Nature' of a brief review of the history of optical glass and of the progress which has been made in its manufacture in Great Britain, especially by Messrs. Chance Bros. and the Derby Crown Glass Works, Ltd.

Is it a British Lens? "Optician" 2634

Amat. Phot., April 16, 1919, p. 324

List of over one hundred Anastigmat lenses, their makers and country of origin.

Practicus in the Studio—More About Lenses 2638

B. J., 1919, p. 232

Deals with the use of portrait lenses in the studio and gives advice on the selection of focal length in relation to the character of the work and the size of the studio.

Practicus in the Studio—Portable Studios 27

B. J., 1919, p. 186

This article deals with the construction of a studio which can be removed and re-erected at small cost.

Fireproof Booths 067

Mot. Pict. News, May, 1919, p. 3253

A description of various types of portable fireproof booths for motion picture projecting machines.

Lithographic Transfers from Bromide Prints J. Graham 0722/89

B. J., 1919, p. 188

The bromide print is bleached in a solution similar to that used for the Bromoil process, the particular one adopted consisting of copper chloride and bichromate. After bleaching and washing, the print is inked up with transfer ink and the image transferred to the stone or metal. The article is useful as giving fairly full instructions for working.

The Principle of Screen Action A. J. Newton 07332

Amer. Photo-Engraver, April, 1919, p. 158

Reprinted from E. K. Co. booklet on "Reproduction Work with Dry Plates."

Prices of Engravings in Various Countries

Process Engraver's Monthly, Feb., 1919, p. 17

Comparisons are given showing that there is not much variation in prices of engravings all over the world.

Costs in Photo-engraving A. J. Newton

B. J., 1919, p. 231

Explanation of the cost system used in the photo-engraving department.

Sir William Crookes died on April 4th. At the beginning of his career Crookes did much work in photography, being the inventor of a dry collodion process and

one of the first, if not the first, to use magnesium as an artificial light source in photography. In 1857 he became the editor of what is now the *British Journal of Photography*, and in 1859 the first editor of the *Photographic News*.

B. J., 1919, p. 189

## 2. Physics

Vacuum Arc Spectra of Various Elements in the Extreme Ultra-Violet  
J. C. McLennan, D. S. Ainslee and D. S. Fuller  
Proc. Roy. Soc., March, 1919, p. 316

An account of some work done with a fluorite prism vacuum spectrograph to add further information to the work on ionization potentials. Results are given for copper, zinc, aluminium, carbon, thallium, tin, lead, iron, cobalt, nickel and cadmium down to 1400 Å. U.

An Investigation of the Ionizing Power of the Positive Ions from a Glowing Tantalum Filament in Helium  
F. Horton and A. C. Davies  
Proc. Roy. Soc., March, 1919, p. 333

Shows that the positives from a glowing tantalum filament do not ionize helium when they collide with the gas atoms with velocities up to 200 volts, but that they liberate electrons from a negatively charged platinum surface when they bombard it with velocities greater than about 20 volts.

Aerial Photometry  
M. Luckiesh  
Astrophys. J., March, 1919, p. 108

This paper recounts the preliminary measurements upon which are based the recommendations for airplane camouflage outlined in other abstracts in this *Bulletin*. A summary of results is hardly possible, but the paper is compiled from extensive observations and explains the application of various photometric methods to the solution of a new problem.

The Visibility of Airplanes  
M. Luckiesh  
J. Frank. Inst., April, 1919, p. 409

On the basis of photometric measurements determining relative brightness of earth areas, water and sky, it is possible to make recommendations for the camouflage of airplanes. The important factors are, in order, brightness, hue, size and shape of pattern. A plane to be unseen from above should have a general reflecting factor of about .06, and might well have the dull green and mottled appearance of woods, with very low contrasts. A sea plane requires no pattern. As seen against a bright sky an airplane is a very dark object, and the first essential of the camouflage of such planes as are to remain unseen from below is an increase of their present brightness, and the change of the common yellow color to the blue of the sky. Neither a translucent wing covering nor artificial illumination seems desirable. Airplanes for use at night

may best be painted a dull black. There seems no chance of success for the confusing patterns which are employed to mislead observers as to the course of ships.

### The Color of Water

W. D. Bancroft

J. Frank. Inst., April, 1919, p. 459

This paper, which is continued from the March issue of the Journal, quotes largely from Spring and somewhat from Rayleigh, and reinforces the conclusion, given in the abstract in this *Bulletin* for May, that water is a blue substance. Very minute amounts of minerals, or of humus, impair the blueness. Variation in temperature makes deep water appear turbid, on account of the variation in index of refraction.

### Prisms with Constant Deviation

E. Bloch

J. de Phys., 1917, p. 145

The properties of constant deviation prisms are outlined and demonstrated geometrically.

### The Radiator Type of Tube

W. D. Coolidge

Amer. J. Roent., April, 1919, p. 175

Discussion of the advantages of the radiator type, self-rectifying X-ray tube.

### The Origin of Spectra (Guthrie Lecture)

J. C. McLennan

Proc. Soc. Phys., Dec., 1918, p. 1

From the work of various investigations it appears quite generally agreed that with vapors of such elements as Hg, Zn, Cd, and Mg, the ionization potentials are given by  $Ve = (1.5, S) \times h$  where  $(1.5 \times S)$  is the highest frequency of the series  $\nu = (1.5, S) - (m, P)$ . It also seems established that a vapor may emit a monochromatic radiation provided all the bombarding electrons possess energy according to the quantum relation  $Ve = h\nu$ . By increasing the speed of the electrons higher lines in the series may be obtained. Departure from this view are held explained by Maxwellian distribution of velocities in streams of electrons from incandescent cathodes. Descriptions are given of a fluorite spectrograph and of a vacuum grating spectrograph.

### Low-Voltage Arcs in Metallic Vapors

J. C. McLennan

Proc. Phys. Soc., Dec., 1918, p. 30

Several experimenters have found that arcs could be struck between terminals in mercury vapor bombarded by electrons when the P. D. applied was less than required to ionize the mercury atoms. This paper describes some experiments carried out by R. Harmer and F. W. Kemp with a view to adding to the information on the subject. The results confirmed the work of the earlier experimenters.

### Weighing High Temperatures in an Electric Balance

J. M. Bird

Sci. Amer., April 26, 1919, p. 480

A new system of pyrometry is described in which temperatures are measured through a thermo-couple by balancing the unknown E. M. F. so generated against a known E. M. F. The balance point is read on a potentiometer. The use of this apparatus is cited in connection with heat-treating furnaces in steel mills.

**Focus of a Negative Lens**

019

Process Engraver's Monthly, Feb., 1919, p. 29

Recommended to draw circle on ground glass twice the diameter full lens aperture. Then turn camera to sun and rack in or out until image occupies the circle. Distance from ground glass to lens gives focus.

### 3. Chemistry

#### (A) General Inorganic Chemistry

**How the Nitrogen Problem has been Solved**

H. J. M. Creighton

J. Frank. Inst., April, 1919, p. 377

This paper gives without undue technicality the details and efficiency of the various artificial methods of nitrogen fixation.

**Investigation of Chrome Tanning Liquors**

J. R. Blockey

J. Soc. Chem. Ind., 1919, p. 82A

Measurements of hydrogen-ion concentrations by means of the hydrogen electrode show that the acidity of green chromium solutions is roughly ten times that of violet solutions of equal strength, the cause being the greater hydrolysis in the green solutions. This explains the greater swelling action on gelatin of the green solutions. As violet and green solutions are diluted, the differences become less marked. A violet solution when made basic by gradual addition of sodium carbonate or hydroxide gives a permanent precipitate much sooner than a green solution.

#### (B) Analytical Chemistry

**A New General Method for Determination of Iodine**

N. Tarugi

Chem. Abst., 1919, p. 545

**Quantitative Determination of Acetone  
in Smokeless Powder**

A. Pieroni

Gazz. Ital., Dec. 31, 1918, p. 183

The acetone is distilled out of the sample in a current of steam and determined iodimetrically. The conditions for quantitative formation of iodoform are described.

**A Very Sensitive Reaction of Copper.**

L. Maquenne

Application to the Analysis of  
Ashes and of Arable Soil

and E. Demoussy

Compt. rend., March, 1919, p. 489

To the hydrochloric acid solution, carefully freed from iron and manganese and evaporated to a small volume, is added first a small quantity of a dilute solution of a

zinc salt and then a little potassium ferrocyanide solution, when the presence of copper is shown by the formation of a blue coloration or precipitate.

Standard Methods of (Paper) Analysis.

See 3 D.

Analytical Methods for the Paper Industry (W. H. Gesell). See 3 D.

## (C) Colloid Chemistry

Properties of the Colloid State and  
Their Application to Industry

W. C. McC. Lewis

J. Soc. Chem. Ind., 1919, p. 1 T

A brief review is given of some of the fundamental conceptions in the chemistry of colloids. There are few broad comprehensive principles. Colloid chemistry is primarily that of surface layers, and capillary chemistry is not yet well developed. The work of Langmuir (J. Amer. Chem. Soc., 1918, p. 1361) and that of Harkins (J. Amer. Chem. Soc., 1917, p. 1588) are real advances in this field.

The Degree of Dispersion of Colloids

G. King

and Its Determination

J. Soc. Chem. Ind., 1919, p. 4 T

A detailed description is given of the principles and methods employed in the use of Zeigmondy's slit and cardioid ultramicroscope. The author was associated with Zeigmondy in the latest development of this instrument, the immersion ultramicroscope. The smallest particles that can be counted with the old instrument have a diameter of 5 $\mu$ . Particles of 3 $\mu$  diameter can be counted with the immersion ultramicroscope, while even smaller particles can be seen in concentrated solution.

Investigation of Chrome Tanning Liquors (J. R. Blockey). See 3A.

## (D) Organic Chemistry

Present Development of the Cellulose Acetate Industry

1513

Bull. Soc. d'Encouragement pour l'Industrie Nationale, Nov.-Dec.,  
1918, p. 238

A general discussion of the cellulose acetate industry in France. A list is given of the firms which are making articles from cellulose acetate, of which the most important are the following: Compagnie Adastras, Boulogne; Clement & Riviere, Pantin; Nauton Sons & de Marsac, Saint-Ouen; Soc. l'Emaillite, Levallois-Perret; Soc. Novavia, Malakoff.

Intermediates Used in the Preparation of Photosensitizing Dyes

1581

I. Quinoline Bases

L. A. Mikeska, J. K. Stewart

and L. E. Wise

II. Quaternary Halides

C. H. Lund and L. E. Wise

Synthesis of Pinaverdol      L. E. Wise, E. Q. Adams, J. K. Stewart  
and Pinacyanol                      and C. H. Lund

J. Ind. Eng. Chem., 1919, pp. 456, 458, 460

A series of three communications from the Color Laboratory of the Bureau of Chemistry. In the first the synthesis in the laboratory of quinoline, quinaldine, beta-methyl quinaldine, and 2-4-dimethylquinaldine are described, employing methods which do not involve steam distillation. The second paper deals with the addition of methyl and ethyl iodides to the above bases. In the third the condensation of these methiodides and ethiodides is discussed, with directions for the isolation of the required products. Comparison of their absorption spectra with those of the corresponding British and German products indicates complete identity. (It may be pointed out that the dogmatic formulation of the structure of pinacyanol, accompanied as it is by no experimental evidence beyond the formation of a similar compound from quinaldine ethiodide alone, appears somewhat gratuitous in view of the complexity of the problem.)

Quinolines (Pinacyanols, Dicyanins)      O. Fischer  
J. Chem. Soc., 1919, p. i. 173

Structural formulæ for pinacyanols and dicyanins are put forward, in which the two quinoline radicals are shown united in different positions by a vinylidene group, and are thus regarded as containing the allene structure. In the pinacyanols the vinylidene group is attached to the alpha carbon atom of each quinoline nucleus; in the dicyanins it is attached to the alpha and gamma atoms respectively (no preference is given for either of the alternative structures.) It is shown that not only is the presence of quinoline ethiodide unnecessary (as also shown by Wise, Adams, Stewart and Lund, preceding abstract) but that the formaldehyde in pinacyanol condensations can be replaced by an oxidizing agent, such as air, or ferricyanide, or persulfate.

The Utilization of Cymene for the Preparation of      H. A. Lubs  
Photographic Developers

J. Ind. Eng. Chem., 1919, p. 455

Para-cymene, which forms the main constituent of the spruce turpentine obtained as a by-product in the sulfite pulp process is converted into carvacrol, either by nitration, reduction and diazotisation or by sulfonation and fusion with alkali this is converted into the corresponding para-aminophenolic derivative, p-aminocarvacrol, by treatment with nitrous acid and reducing the nitroso-carvacrol with ammonium sulfide. Amino-carvacrol is stated to form a satisfactory developing agent, superior to para-aminophenol itself but inferior to aminocresol and p-methyl aminophenol. It is interesting to note that the closely allied and isomeric aminothymol is by no means so good a developing agent, and that hydrothymoquinone, the corresponding dihydroxycymene, shows no advantage over hydroquinone.

A Method for the Purification of Certain Azo Dyes      H. A. Lubs  
J. Ind. Eng. Chem., 1919, p. 456

Filtered solutions of the azo dyes (acidic) are treated with sodium acetate, in place of sodium chloride, as is the usual procedure. (It is extraordinary that the

author, who has carried on the work in the Color Laboratory in the Bureau of Chemistry, should estimate the purity of the products by ashing, rather than by the more rapid, accurate, and significant method of measuring the absorption spectrum.)

#### The Future of Cellulose Acetate

H. S. Mork

J. Ind. Eng. Chem., 1919, p. 474

The author sets a promising future for this material, pointing principally to the use of the airplane wing varnish and artificial silk.

#### The Preparation of Pure Organic Chemicals

H. T. Clarke

J. Ind. Eng. Chem., 1919, p. 475

Report to the American Chemical Society on the progress of the work in the Department of Synthetic Chemistry of the Research Laboratory.

#### Making Cellulose from Cotton Linters

J. H. Wallace

Paper, Feb. 12, 1919, p. 34

A description of the methods of cotton purification at U. S. Government explosive plant "C" at Nitro, W. Va.

#### On the Distillation of Cellulose and of Starch

A. Pictet and

J. Sarasin

Helv. Chim. Acta, 1918, Vol. I, p. 87

Cellulose and starch are subjected to distillation under reduced pressure. In both cases the same product is obtained which forms tablets or large flat sided needles, is colorless, does not decompose in moist air, and melts at 179.5-180° C. After purification this compound is found to possess the formula  $C_6H_{10}O_5$ . It is not colored by iodine, does not reduce Fehling's solution even when hot, does not react with phenyl hydrazine, is not oxidized by permanganate in the cold or by bromide water. At the boiling point  $HNO_3$  attacks it, yielding oxalic acid. Yeast does not ferment it. By the study of this substance, called l-glucosan, some light may be thrown upon the structure of cellulose. L-glucosan seems to be an inner anhydride of dextrose and it possesses three alcoholic hydroxyls and also shows great stability.

#### Nitrating of Woodpulp Cellulose

S. D. Wells and

V. P. Edwardes

Paper, Feb. 12, 1919, p. 180

The coniferous woods appear to be preferable on account of their low pentosan content and the soda process preferable to the sulfite as less oxycellulose is obtained.

#### Oxidation of Hydroquinone and Its Sulfonic Acids

J. Pinnow

J. Chem. Soc., 1919, p. i. 123

Experiments show that when oxidized by Fehling's solution in absence of air, hydroquinone and its sulfonic acids require almost exactly three atoms of oxygen per molecule and give dihydroxyhydroquinone or its sulfonic acids. In presence of sulfite, hydroquinone and its sulfonic acids are oxidized by Fehling's solution principally to

dihydroxyhydroquinonedisulfonic acid; this oxidation proceeds by way of quinone, hydroquinonesulfonic acid, quinonesulfonic acid and hydroquinonedisulfonic acid. Unlike quinone and its sulfonic acids, dihydroxyquinone and its sulfonic acids do not unite with sulfite.

#### Nitration of Sucrose

E. J. Hoffman and  
V. P. Hawse

J. Amer. Chem. Soc., 1919, p. 235

Cane sugar, on nitration, yields an octanitrite, which on heating from 33° to 87° C. during two hours shows no decomposition.

#### Paper Microscopy

J. H. Graff

Paper, Feb. 12, 1919, p. 42

A bibliography of articles which have appeared on this subject.

#### Analytical Methods for the Paper Industry

W. H. Gesell

Paper, Feb. 12, 1919, p. 26

A report on standard methods of testing materials used in the manufacture of paper. Methods for sulfate of aluminium, sodium chloride, sulfur, coal, cooking acid, bleaching powder, caustic soda, water, rosin and rosin size are given.

#### Standard Methods of (Paper) Analysis

Paper, Feb. 12, 1919, p. 114

Analysis and testing methods recommended by the Canadian Committee on standards.

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## From Eastman Kodak Research Laboratory

#### Refinements in Spherometry

G. W. Moffitt

Phys. Rev., April, 1919, p. 261

#### Communication No. 78 from the Research Laboratory of the Eastman Kodak Company

The shortcomings of the ring spherometer are discussed and a new type of contact ring with selected ball bearings for contact members, giving greater precision and reliability, is described. A modified instrument having but one contact is also described. It has certain advantages in some cases.

The auto-collimating method, as often used, is limited in its precision because of the depth of focus of the optical system. The improvement described consists in placing the lens on a nodal slide and adjusting until lateral motion of the image in the field of view is no longer noticeable when the slide is rotated through an angle. In the caustic curve methods use is made of the aberrations introduced on oblique reflection from a spherical surface. By measuring the distance from the primary to the secondary image and multiplying by a factor depending upon the arrangement of the apparatus the radius is determined with high precision for concave surfaces or

convex surfaces of short radius. This method is especially valuable when the element of surface is small

Surface measured with precision by the various methods described are as follows: (1) Mechanical methods: Concave and convex surfaces of short and medium radius, the precision decreasing rapidly as the radius becomes larger. (2) Auto-collimating method: Concave and convex surfaces of short or medium radius up to the limit of the slide on the turntable, the precision being high and practically independent of the radius. (3) Caustic Curve methods: Concave surfaces of any radius, to a high degree of precision, even when the element of surface available is too small to be measured by other methods. Convex surfaces of short and medium radius to a degree of precision decreasing with increase of radius.

## Mechanical Analysis of Powders and Subdivided Materials

### Report No. 605

Mechanical analysis, or grading of subdivided materials in respect of state of subdivision, is important both for abrasives for optical work and for coated materials such as sensitive silver halides, baryta, and paints. Broadly, the factors to be determined are:

(a) Homogeneity of composition; while largely a chemical factor, uniformity as regards specific gravity may be determined by a practical scale of liquids of increasing density.

(b) Uniformity of grain size. For powders the particles of which have diameters above  $1/400$  inch, not passing 200 mesh screen, this is determined by screen analysis, from which a grading curve can be plotted.

For materials finer than this, the methods of elutriation, developed for the analysis of soils, ceramic materials, etc., are employed. These depend upon fractional settling either in still water or better in a uniform current of known velocity. The Schoene elutriator is used in the Laboratory and the data are presented in a frequency curve.

Another method presented in the Laboratory consists in the application of blood corpuscle counting under the microscope. Diluted suspensions of the finely divided materials are made, containing known amounts of the material. From counts of the number of particles per unit volume and the density of the material, the mean grain size for the whole material or for specific fractions may be determined.

## Test of Diffusing Glass for Factory Windows

### Report No. 611

Samples of wire glass were submitted to the Laboratory for a test of the transmission and diffusion of daylight. It was observed that ribbed samples give glare and high contrast when direct sunlight falls on them and the transmission is lower than some of the other samples. One sample was found to be a desirable window glass having a relatively high transmission and giving good diffusion without glare and bright spots. This is a preliminary report and further tests will be made as soon as the necessary apparatus can be constructed.

## Report on Mercury Intensification

### Report No. 618

This is a synopsis of the different methods of mercurial intensification, giving concisely the reagents employed, the nature of the reaction, the products, and noting

the tone, stability and gradation characteristics of the intensified image. Mercuric chloride bleaching may be followed by blackening with a developer, with sulfite, with ammonia, with sulfides or with silver alkali cyanide. Ferrous oxalate gives a stable mercury-silver amalgam image, with proportionate intensification. Organic developers containing sulfite give stable image but sub-proportionate; sulfite and ammonia somewhat less stable image. Sulfides and Schlippe's salt give stable images of warm tone, while silver potassium cyanide gives a complex product of variable composition liable to darken in light. It is pointed out that mercuric bromide may be substituted with advantage as a bleach in many cases. Mercuric iodide in excess of potassium iodide solution may be used without blackening agent giving a somewhat unstable reddish brown image or may be followed by sulfides or pyro-ammonia. It is liable to reticulate the gelatine. A one solution mercury intensifier consists of mercuric thiocyanate in potassium thiocyanate solution. The image is only partly metallic and probably unstable.

### Over-night Development for Under-Exposure

G5

#### Report No. 631

Under the title of "The Best from Under-Exposures" the B. J. Editorial, Jan. 10, 1919, referred to a treatment often recommended for under-exposure. The treatment outlined was first to give normal development, then dilute development 1/6 and allow the plate to soak in the developer for 1½ hours, following this with soaking in clean water overnight.

It seemed probable that the treatment could only result in heavy fog, particularly with high speed emulsions, but a series of trials was made to learn if the method had any advantages over simply prolonging development in normal developers until maximum detail appeared. Three developers were used in the trials: Pyro soda, P. A. P., and Chlorhydroquinone.

Both camera exposures and sensitometric strips were used. Development was carried out for the greater part in darkness.

The results showed that, instead of the method increasing shadow detail, detail was lost in the heavy black and dichroic fog produced. The sensitometric strips were reversed in the lower densities.

No trials were made on slow plates.

### The Relative Photographic Actinic Power of Eastman Flash Sheets, Eastman Flash Cartridges and Magnesium Powder

#### Report No. 660

Corresponding sizes of the Eastman Flash Cartridges and Eastman Flash Sheets produce the same photographic effect on plate or film emulsions, that is, the same exposure is required with No. 1 Flash Sheet and No. 1 Flash Cartridge, No. 2 sheet and No. 2 cartridge, and No. 3 sheet and No. 3 cartridge. Each square inch of flash sheet is equivalent to 1 grain of magnesium powder when this is used in a "blow-through" lamp or in a slow-burning flash powder, though in the case of a very rapid flash powder when the combustion of the magnesium is incomplete this figure should be increased.

### A Bichromate-Mercury Intensifier

#### Report No. 661

A method of intensification which consists of bleaching the negative in a

bichromate bleach, washing, treating with a mercuric iodide intensifier, washing, and then sulfiding was compared with the Eastman Intensifier as follows;

One third of a negative was bleached in a bichromate bleaching bath, washed five minutes, bathed for five minutes in the Eastman Intensifier, washed five minutes and then darkened in a 1% solution of sodium sulfide.

The second portion was treated with the EK Intensifier and sulfided, while the third portion was simply treated with the EK Intensifier.

The three portions of the negative were then re-assembled and a print made from the composite negative. Examination showed that the EK intensified portion gave the greatest contrast, the contrast of the three portions being in the following order: No. 3, No. 1, No. 2.

It is apparent therefore that the above method gives results inferior to those obtained by a simple treatment of the EK Intensifier.

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## Books

### Recent accessions to the Library:

A Handbook of Physics Measurements

E. S. Ferry

Wiley & Sons, New York

A two volume laboratory manual. Vol. I: Fundamental Measurements, Properties of Matter and Optics. Vol. II: Vibratory Motion, Sound, Heat, Electricity and Magnetism. In addition to the usual run of experiments some new ones are included illustrative of recent developments in light. The book is evidently an attempt to include in one treatise all the laboratory physics usually required in a general course for students of all branches of engineering. There is nothing new in the method of presentation of the work. The treatment of observational and instrumental error, and of the reductions of readings would generally be considered rather brief.

Liquid Fuel for Internal Combustion

H. Moore

Engines—A Practical Treatise for Engineers and Chemists

Crosby Lockwood & Son, London

This is a comprehensive and useful survey of different liquid fuels—petroleum products, coal tar products, alcohols, and animal and vegetable oils. There is a good account of the methods of physical testing and chemical analysis employed and the relation of properties to thermal efficiency in the internal combustion motor. Useful tables are given in the appendix.

The Construction of Graphical Charts

J. B. Peddle

McGraw-Hill Book Co., New York

The two halves of the book treat two quite distinct subjects. The first half describes briefly and simply the most important nomographical charts—sliding scale, alignment, and hexagonal, — following closely the treatment and terminology of D'Ocagne. The second half describes methods other than least squares for fitting an empirical equation to experimental data. Numerous applications are given throughout the book.

## Patent Abstracts

### U. S. Patents

1298514

I. Kitsee K/43

A Method of Color Photography in which a suitable support is coated on opposite sides with films of differently colored chromated gelatine and then registering pictures are printed simultaneously on both of said films through color filters identical with the color of the films.

1295978

A. F. Giddings L2

Method of Making Artificial Negatives in which a film or plate is coated on both sides with a solution of asphaltum in turpentine and then registering tracings made on each coating. By making one set of tracings more delicate than the other an artistic effect is said to be obtained.

1294249

C. E. Eckles 061

A Frame in the Form of a Miniature Stage, upon which miniature accessories may be placed and in which titles, etc. may be placed to be photographed as inserts.

1295374

C. Rockwell and W. M. Davis 061

A Method of Making Motion Pictures in which the background is furnished from a motion picture projector. Parts of the picture projected are made opaque, so that no light is projected and the object is painted upon the screen at such points. The actor remains in front of these places so that he does not interfere with the projected portion of the background.

1296471

L. S. Brainerd 061

A Method of Making Motion Pictures in which the views are taken of a setting including actors. A frame is provided in between the setting and the camera, in which cartoons, cards, etc. may be placed so that they may be inserted during the taking of the picture.

1294672

O. E. Kellum 069

A Method of Reproducing Synchronous Phonograph and Motion Picture Records. When the records are taken, a counting machine records the revolution of the actuating mechanism of each and later, when the film is edited for reproduction and a master record made, the portions of the phonograph records corresponding to the used film record are carefully noted and a corresponding master phonograph record is made of the used portion only.

1294882

J. J. Dilks 1212

A Machine for Securing Metal Reinforcing Bands to the edge of Picture Film. Integral eyelets are struck-up at intervals along the reinforcing band to form the reinforcements for the edges of the apertures in the film.

1298356

J. Koetschet 1511

Production of Acetic Anhydride and Acetaldehyde. The thermal decomposition of ethylidene diacetate (See Brit. Patent 112765, this *Bulletin*, p. 130) into acetic anhydride and acetaldehyde can be rendered quantitative by the employment of catalysts such as sodium pyrosulfate, sodium acid phosphate, metaboric acid, or thioacetic acid at temperatures varying from 110° to 140° C.

1295533

H. A. Levey 1517

Addition of Chinese wood oil (tung oil) to cellulose nitrate or acetate dopes; on drying the dope at 100° C. the oil undergoes partial oxidation and polymerization, yielding a product of increased flexibility and strength.

1298199

J. N. Goldsmith 1517

Addition of Acetanilide with or without triacetin to airplane dopes; the use of tetrachloroethane may be avoided by the addition of these ingredients.

1294333

E. W. Davis. 2103—3106

Assigned to the Universal Camera Co.

An Adapter for Fitting Different Lenses to the front of a camera. It has a shoulder for engaging within the lens holder of the camera and an adjustable means for positioning the lens within itself.

1295373

W. A. Riddell. Assigned to E. K. Co. 2103

An Adjustable Device for a Sliding Lens Board in which a cross head engages ways upon the bed of the camera and is spring-pressed upwardly. A finger catch actuates the spring to release this engagement when the catch is pulled down to move the lens board.

1295395

J. M. Wade 2131

A Folding Camera in which a second lens mounted on the lens board with the principal lens is used for focusing purposes, the image being reflected from an inclined mirror to a ground glass in the top of the camera which is of the same size as the plate. The parts fold up compactly when not in use.

1298296

R. C. Colwell 2151

A Camera in which a Magazine containing the rolls of film may be drawn up from the body of the camera into a bellows upon the top while the camera is being focused. When the magazine is thrust back down, a focusing screen is automatically thrown in the rear and the film takes its place at the proper focal plane.

1298582

LeRoy D. Shafer and L. J. Bollinger 2151

A Camera in which a Small Reflecting Mirror may be placed directly in front of the focal plane. It reflects on a small piece of ground glass a portion of the subject, which may be viewed through the top of the camera and thus focused. The whole attachment is removed before the exposure is made.

1294433

W. Evers 2152

A Double Exposure Prevention Device consisting of a ratchet-operated disk which is actuated with the camera shutter and a signal thrown into position. It cannot be again actuated until the signal has been replaced.

1295758

E. G. Kesling 2153

An Inscription Attachment for Roll Film Cameras. The roll of film comprises a strip of celluloid of the usual kind with opaque ends, but without an opaque backing sheet. The backing paper is translucent. A plate in the back of the camera separates the paper from the film and an opening above this plate permits the paper to be written on at this point. The inscribed portion of the paper is then moved into position beneath another opening in the camera, where it can be light-printed upon the film.

1293595

C. M. Williamson 219-083

Operating Means for a Camera in which the plates are changed semi-automatically. The changing means may be operated either manually or by means of an airscrew, the camera being intended for airplane use.

1295544

D. McNeill 219

A Camera of Special Construction is driven by a flexible shaft from the axle of an automobile wheel as the car is being driven through a section of country to be charted. Pictures are taken at regular intervals automatically upon a long roll of film. Prints from this roll are made upon another roll, which may be placed in a similar apparatus driven in a similar manner, so that another person driving a car over the same route can identify his position by the views.

1298312

E. P. Earle 219

A Foldable Camera intended for a single use. It is made very simply and preferably of paper, and may be folded very compactly. It is sold with a single unexposed film or plate and contains in a compartment an amount of developing material. After exposure, this compartment is punctured and water poured in. The exposed picture is developed in the camera which is thereupon destroyed.

1297329

H. Davis. Assigned to E. K. Co. 222

An Enlarging Camera in which the easel is carried on an extension which telescopes into the main frame and the main frame supports the lens and negative holder adjustably one to the other and also the lamp casing.

1298417

J. H. Stillwaggon. 2234

Assigned to Auto Slyde & Moving Picture Machine Co., Inc.

A Magazine Stereopticon in which the light is thrown through a horizontal transparency against a mirror and reflected horizontally through the lens. A series of transparencies are fed into this exposure position and fall into a magazine.

1296583

F. L. Oleson 2235

An Automatic Stereopticon of the type in which a cylindrical frame carries a

series of transparencies, which are brought one by one to exposure position before a lamp mounted within the frame.

1295342

E. Markley 231

An Apparatus for taking Flash Light Pictures. An electric incandescent lamp is used for furnishing light for focusing and electrical means are provided for simultaneously actuating the shutter, igniting a flash powder and also energizing an arc lamp which remains lighted a short definite interval. Means are provided for disposing of the smoke from the flash powder.

1295345

A. J. Matter 2614

A Support for Attaching a Camera to any convenient object, such as a tree trunk. The pointed ends of two hinged arms can be driven firmly into the object and a third pointed rod used as a supporting brace is also driven into the object.

1297040

E. A. Trapp, Dec'd. S. B. Trapp, Executrix 2631

A Lens said to have the effect of a Plano-parabolic Lens. Its surfaces are curved and are defined as being generated by the movement of a parabola in such direction that the axis of the parabola travels in a plane at right angles to the plane in which the parabola is inscribed and the point of intersection of the axis of the parabola with the curve of the parabola travels in a right line at right angles with said plane in which the parabola is inscribed.

1296156

J. Becker. Assigned to E. K. Co. 264

A Camera Containing a Finder consisting of a negative lens mounted on the support for the camera lens, which is viewed grazingly over the rear sight or mark on the camera body. The finder lens is exteriorly mounted so as to be non-projecting when the camera is folded.

1295298

H. P. Gage. Assigned to Corning Glass Works 2644

A Potash Boro-silicate Glass to be used as a filter to produce daylight effects from artificial light sources, the glass containing copper and nickel.

1295299

H. P. Gage. Assigned to Corning Glass Works 2644

A Potash Glass to be used as a filter to produce daylight effects from artificial light sources, the glass containing copper, cobalt and manganese.

1297957

F. E. Wood 2651

A Kit for Plate Holders comprising a frame having one end slidably mounted, the inner edge of the slidable end and also of the opposite end being beveled to engage over a plate.

1292600

G. L. Harvey 2681

An Exposure Meter on the slide rule principle adapted particularly for use in motion picture work, symbols being included to indicate the speed of cranking and the shutter sizes, as well as the usual picture-taking conditions.

1296432 W. P. Russell 275

A Retouching Frame in which the negative to be retouched is placed beneath a hinged cover having a hole. Different parts of the negative are brought opposite this hole to be worked on. A registering aperture of variable size is located beneath the negative to admit light.

1297703 J. E. Leonard 3107

A Shutter Dissolve for Motion Picture Cameras in which a screen mounted coaxially with the shutter can be moved to vary the shutter opening gradually to increase or decrease the opening as desired.

1298521 J. E. Leonard 3107

A Dissolve Mechanism for Motion Picture Cameras in which the borders of the reproduced positives will be white instead of dark. The film is led past two exposure portions, in one of which the principal subject is photographed upon it, and in the other of which a glare of light is thrown upon the exposure area, the central part of which is shielded, the extent of the shielding varying to produce the dissolve effect.

1297532 C. E. Akeley. Assigned to Akeley Camera, Inc. 312

A Motion Picture Camera in which the film as it passes the point of exposure is bowed slightly to the rear so that the gelatinized front surface of the film will be kept out of contact with the film gate.

1298393 B. A. Proctor. 3201

Assigned to Kinoikon Apparatus Corporation

A Motion Picture Machine in which the strain is partly taken off the perforations of the film by having a curved bearing surface opposite each sprocket which compels the engagement of a very considerable number of teeth of the sprockets and forces the film to the base of the teeth, so that a firm engagement over a large number of teeth is assured.

1298600 F. C. Taylor. Assigned to Ferdinand McCann 3201

A Motion Picture Projector designed with special attention to compactness and facility of operation in which an intermittent film-feeding devise is mounted on an oscillating frame, the adjustment of which controls the framing of the picture. The shutter is interposed between the gate opening and the lens.

1298394 B. A. Proctor. 3202

Assigned to Kinoikon Apparatus Corporation

A Framing Mechanism for Motion Picture Machines in which any loss of register between the picture and the aperture can be immediately restored without stopping the machine.

1295372 G. E. Riddle and W. Queirolo 3204

A Container for Motion Picture Film in which the insertion of the roll of film into an empty receptacle in the container throws the receptacle within the container and in a closed position. The empty receptacles normally fall into a different position, indicating that they are unused.

1296476

J. P. Burnett. 3204

Assigned by Direct & Mesne Assignments to  
Ad Photoscope Co., Inc.

A Film Magazine for Motion Picture Cameras for use with an endless film. The container is circular and is divided into a series of compartments. The film is introduced into an opening in one of the compartments where it naturally falls into loose folds. The edges only of the film contact the edge of the container. When one compartment is full, the container is turned and another one is filled; meanwhile the film is being withdrawn from another aperture.

1297049

C. S. Webster 3204

A Magazine for Motion Picture Machines in which an endless band is used. The band is passed into an opening in one end of the magazine where it naturally assumes numerous loose folds. It is withdrawn from the other end of the magazine. The folds are so arranged that the picture-bearing surfaces do not contact with the wall of the container, but the edges only contact such surfaces. Means are provided for lubricating the film.

1298427

E. G. Wennerblad. Assigned  $\frac{1}{2}$  to P. M. Diers 3208

A Rewinding Reel for Motion Picture Machines in which the film is wound up on the inside of a coil, so that a single rewinding is all that is necessary.

1298392

B. A. Proctor. 3209

Assigned to Kinoikon Apparatus Corporation.

A Motion Picture Projector in which a shield or door is provided for closing the housing containing the mechanism and a fire shutter combined with such door, so that while the film is being displayed the housing will be closed and the shutter open, but when it is necessary to have access to the mechanism, the door will be open so as to intercept the projected beam and shield the film against the heat rays thereof.

1298391

B. A. Proctor. 3209

Assigned to Kinoikon Apparatus Corporation

A Motion Picture Projector in which special provision is made for stopping the motor circuit if the film breaks. A pivotally mounted arm leans against the film and should the latter break, this will fall inwardly and result in the breaking of the electric circuit.

1295653

J. T. Wells. Assigned to The Edwards Mfg. Co. 321

A Motion Picture Projector especially adapted for an endless strip of film which is constantly unrolled from the inside of a reel and rolled back on the exterior thereof.

1298282

G. Bettini 34-317

An Apparatus for Converting a series of motion pictures from one arrangement to another, particularly to transpose a series of motion pictures arranged in the usual way in a long, single row to a circular or spiral arrangement, or to a series of parallel rows in a rectangular sheet.

1297704

J. E. Leonard 364

A Motion Picture Camera in which a focusing finder is mounted adjacent the camera lens. After the camera is properly focused, it is shifted as a whole so that the camera lens occupies the point in which the finder lens was located.

1298390

B. A. Proctor. 366

Assigned to Kinoikon Apparatus Corporation

A Driving Mechanism for Motion Picture Projectors consisting of a motor which drives the mechanism by a friction drive, the speed of which can be very quickly altered by a slidable relation of two disks at right angles to each other. It is intended particularly for use in slowing the mechanism while titles are being projected. By this means a much smaller number of copies of the title need be made, thus saving film.

1295028

M. Handschiegl 383

A Film Coloring Machine for Motion Picture Work. A dye-toned or bleached positive film is taken, passed through a solution to soften the film and the softened film then passed around an impression drum in contact with a negative film which carries a transfer dye. Adjustments may be made to permit perfect registration of the positive and negative films to adjust the period of contact and the force of impression between them. Both films are then passed over continuous driers and wound up.

## British Patents

123786

A. Hamburger K383 KJ88

Color Photography; Toning and After-treatment; Trays, Dishes, and Containers for Lengths of Film. Cinematograph films in color are produced by dyeing or otherwise coloring practically simultaneously both sides of a doubly sensitized film which has been printed and developed. The dyeing may be effected by means of endless absorbent bands, the bands passing, with the film between them, between rollers which press them onto the film, and afterwards between perforated rollers through which dry steam is emitted onto the bands to fix the dye.

123787

A. Hamburger K383 KJ88

Color Photography; Toning and After-treatment; Trays, Dishes and Containers for Flat Flexible Films. Complementary color record negatives are accurately superposed on opposite sides of a film which is sensitized on both sides and are then printed, the images are colored practically simultaneously, and the colored film is preferably combined with a yellow positive to produce a finished picture. The negatives are preferably made in a camera embodying the invention set forth in Specification 28722/12, both negatives being thereby produced simultaneously and one of them being reversed. The positive images may be printed simultaneously and may then be bleached by the well-known Traube method or in a solution made up as follows: 2 fluid ounces of a solution of 1 ounce of potassium iodide in 9 ounces of water are added slowly, and with stirring, to 4 fluid ounces of a solution of 1 ounce of potassium dichromate in 9 ounces of water. 16 ounces of water containing 80 minims of hydro-

chloric acid are then added. After bleaching, the images are dyed simultaneously by means of the frames which form closed tanks in conjunction with the film. The frames are hinged together, and the frame fits into the rebate of the frame. Each frame is provided with rubber or the like, which engages the film to make a tight joint, and with sheets of glass. Inlet and air-exit valves are provided on each frame, and small reservoirs, to take up liquid displaced from either tank when one tank is filled after the other, may be provided. The two frames may be held against the film by means of wing-nuts and screws. After dyeing, the images are fixed with hyposulfite of soda containing 5% of tannic acid. The yellow positive may be obtained by the process described in Specification 20880/11. The bleaching and coloring of the images may be effected in one operation by pressing into contact with them carbon paper or dye gelatine paper which has been soaked for a time, say five minutes, in a solution as follows: copper sulfate, 4 oz.; potassium bromide, 1400 grains; potassium dichromate, 180 grains; hydrochloric acid, 80 minims; in 40 oz. water. The silver images while in contact with the treated carbon or dye gelatine papers are bleached, colored and hardened, and the soft gelatine is afterwards dissolved in hot or cold water, the paper floating away and leaving the colored images free on the films. Specification number 123786 also is referred to.

122943

E. A. Atkins and Rylands Brothers 0945

Optical Projection Apparatus for the Photo-micrographic Projection of Solid Objects, a cabinet being used containing a microscope, a light source and a condenser. The light-source, such as an arc-lamp, is contained in a partitioned space within the cabinet and is regulated from outside by the pinion head. Two condensers deliver a conical beam of light to the microscope in a water-cell. The light reaches the subject from a vertical illuminator within the microscope and the magnified image is projected onto a screen placed outside the cabinet.

112765

Usines du Rhône 1511

Manufacture of Ethylidene Diacetate. Acetylene and acetic acid are caused to react in the presence of organic sulfonic acids, such as benzene sulfonic acid, in presence of mercuric acetate.

123531

K. Muller 222

Mathematical Drawing Instruments; Photography. Relative to a mechanism for tracing an hyperbola which is also adapted for photographic enlarging and reducing apparatus.

122719

J. Courtier and P. Courtier 231

Photographic Flash Lamps. A Device for Producing Flashes by the electric volatilization of fusible wires, for instance of aluminium, copper, or magnesium.

122855

H. Workman 3101

Cinematograph Apparatus. Relates to intermittent feed mechanism for cinematograph apparatus of the Maltese-cross type, and consists in imparting a variable angular velocity to the finger wheel by mounting it with the axis parallel to, but out of line with, the axis of the driving spindle, the finger-wheel being driven by a link connecting two crank-pins or the driving spindle and the finger-wheel respectively. In the form shown, the disk on the driving-spindle and the finger-wheel have crank-pins mounted thereon connected by a link, the arrangement being such that the finger-

wheel has maximum angular velocity when the finger is in engagement with the slots of the Maltese-cross. The finger-wheel rotates on a spindle having an eccentric extension, the rotation of which provides a fine adjustment between the finger-wheel and the Maltese-cross, the spindle being locked in position by means of a pin engaging a circular slot in the plate. With this apparatus, the cover sector and antiflicker sector of the shutter are reduced in proportion to the amount by which the film-movement period has been accelerated relatively to the film-rest period.

122856

H. Workman 3101

**Cinematograph Apparatus.** An intermittent drive for cinematograph films of the claw type has the axis of the main driving spindle parallel to, but out of line with, the axis of the intermediate spindle, and the intermediate spindle is connected to the main driving spindle by a link connecting two crank-pins on the main and intermediate spindles respectively by means of which the intermediate spindle is given a variable angular velocity, the maximum velocity occurring at or near the center of the pull movement of the claw. An apparatus in which two such claw movements are employed. The claw members are carried on levers fulcrumed on arms and driven by means of cranks on the intermediate spindles, which are driven from the main spindle by means of links connected to the crank-pins on the driving and intermediate spindles respectively. The links are provided with the weighted extension to balance the weight of the claw levers and to assist in balancing the irregular movement of the claws. Specification 122855 is referred to.

122990

E. Tassie 3203

**Cinematograph Apparatus.** In shutters for projecting-machines, flicker is diminished by provision in the masking-blades of apertures through which a variable amount of light is allowed to pass under the control of a governor driven by the shutter spindle, exercised upon adjustable vanes, the openings becoming greater as the speed rises. The shutter may also be used in talking-machines.

### German Patent

297442

Farbenfabriken vorm. Bayer 1511

**Preparation of Acetic Acid from Acetylene.** A quantitative yield of acetic acid is obtained in a single operation when acetylene is treated with solutions of persulfates or peroxides in presence of salts of mercury. (J. Chem. Soc., 1919, p. i. 147.)



PA 660411



# Monthly **ABSTRACT** Bulletin



July, 1919

Issued by the Research Laboratory  
**EASTMAN KODAK COMPANY**  
Rochester, New York



# Monthly Abstract Bulletin

Vol. 5, No. 7

July, 1919



J. F. Currier,  
Belmont.

## Errata

In the *Abstract Bulletin* for June, 1919: On page 114, line 18, instead of *Proc. Soc. Phys.*, read *Proc. Phys. Soc.*; on page 114, line 21, instead of *(1.5 x S)*, read *(1.5, S)*; on page 116, line 6, instead of *W. C. McC. Lewis*, read *W. C. McC. Lewis*; on page 119, line 7, instead of *octanitrite*, read *octanitate*; and on page 128, line 11, instead of *endles* read *endless*.

## Additions to Numerical Classification

- 2673 Supplementary Lenses
- 2674 Optical Attachments to Lenses

## 1. Photography

- Action of Moisture on the Sensitiveness of Photographic Plates E. Cousin 014

Bull. Soc. Franç. Phot., Oct., 1918, p. 27

An ordinary photographic film was found to possess a considerably lowered sensitiveness while moist.

- Contribution to the Density-Exposure Law for Photosensitive Layers F. Halla and A. Schuller 015

Zeits. phys. Chem., 1918, 93, p. 173

Equations are deduced for absence of reflecting background (negatives and transparencies) and for case of layers with reflecting background (papers). The initial assumptions made are modelled closely on those of Hurter and Driffeld, and the approximate relation obtained is the familiar logarithmic one. Qualitative agreement with measured sensitometric curve is found, but no quantitative comparison made.

- True-to-Nature Photographs H. Collingridge 019

B. J., 1919, p. 249

Deals with the optical conditions which must be fulfilled in order to produce correct perspective.

D18

At the Royal Photographic Society W. C. Mann, of Thomas Illingworth & Co., read a paper on "Development Papers and Desensitizers."

B. J., 1919, p. 269

- Reversal in Tank Development G041

B. J., 1919, pp. 270, 287, 302

Letters from correspondents in regard to developing plates and films in a tank where some of the plates or films come out positives while the rest are negatives. No satisfactory explanation of the phenomenon is offered in the correspondence.

- Notes on-Drying with Spirit L. P. Clerc H3

Bull. Soc. Franç., Phot., Jan., 1919, p. 85

See also B. J., 1919, pp. 259, 273

The author deals with the cause of the white deposits which frequently appear on plates dried with alcohol. These are ascribed to the deposition of calcium salts derived from the wash water. It is suggested that the opalescence can be avoided by the use of distilled water before drying. The author has also made a study of the

effect of the strength of the spirit on the duration of drying. The results show the great advantage of using strong spirit and consequently of draining the negatives before and after treatment in the spirit baths and the use of two baths in order that the last bath may be strong.

### Titling Prints

J3

B. J., 1919, p. 258

Various methods are given for placing a title on a negative used for making a quantity of prints. It is suggested that the problem would be much simplified if thin celluloid coated with process emulsion were available.

### Developing Bromides by Time

J4

B. J., 1919, p. 257

Editorial note laying stress on the importance of efficient and uniform development.

### Practicus in the Studio—Mounts and Mounting

N1

B. J., 1919, p. 278

This deals with the choice of mounting papers as well as tone and color and trimming and mounting by both the dry and wet methods.

### Measurements of Plate-Sensitiveness to X-Rays

X015

B. J., 1919, p. 250

Abstract of a paper by N. C. B. Allen and T. H. Laby read before the Royal Society of Victoria, giving results of a sensitometric study of X-ray plates.

### Practicus in the Studio—Advertizing the Studio

0311

B. J., 1919, p. 263

This article deals in a general way with the means which a photographer having a studio in a town of medium size may take for obtaining business.

### Practicus in the Studio—Business Methods

0311

B. J., 1919, p. 291

Recommendations are made chiefly in respect to the adoption of an efficient system of bookkeeping and to the means which may be adopted for the collection of outstanding accounts.

### Commercial Photography

032

Phot. J. Amer., 1919, pp. 198, 268

Hints in photographing motors, vehicles, glass goods, dress materials, etc., and on panoramic prints and flash-light.

- Formation of Blisters in Photographic Prints** R. E. Liesegang 041

Koll.-Zeits., 1918, p. 200

An experimental study of this photographic trouble. The actual cause is excessive osmotic pressure in the gelatine produced when a film saturated e. g. with alkali is placed in water. This drives out air from pores in the paper which collects to bubbles under the gelatine membrane.

- Quinine Backing for Plates** 041

B. J., 1919, p. 286

F. J. Yeatman from the Pharmaceutical Journal recommends the backing of plates with quinine hydrochloride in absolute alcohol, this being stated to prevent halation.

- Stereoscopic Photography.—I** C. E. B. 043

B. J., 1919, p. 290

The first of a series of articles dealing with the matter generally.

- Grain and Enlarging** 046

B. J., 1919, p. 242

In portrait work the degree of enlargement is limited by the point at which the grain will show. The author considers that to be well within the limit of granularity, enlargement must not be greater than two or three diameters.

- Practicus in the Studio—Enlargements** 046

B. J., 1919, p. 247

This deals with the commercial considerations concerned in enlargements in the portrait business, pointing out the necessity for high quality and also the opportunities which occur for the sale of high priced enlargements.

- The Fundamentals of Photography.** C. E. K. Mees 0561

Chapter XV. The Nature of Color

Kodakery, June, 1919, p. 18

- Color Values in Monochrome and a New Viewing Filter to Assist in Obtaining Them** F. F. Renwick 0561—2664

Phot. J., 1919, p. 158

After a discussion of the color sensitiveness of the eye and of photographic plates, the author calculates the absorption curve of a filter which gives correct rendering when using a panchromatic plate, or, conversely, a filter which will enable the eye to perceive the luminosities of various colors as they will be rendered on a plate of any range of sensitiveness. The paper contains a useful reduction of Abney's measurements of the luminosities of the arc spectrum, this being chosen as the light standard in preference to daylight.

## Photographs as Evidence

La V. T. Ryder 082

Photo Era, May, 1919, p. 248

A discussion of the value of photographs as legal evidence in civil and criminal cases, together with directions for securing such photographs.

## Calculations in Aerial Photography

L. P. Clerc 083

Bull. Soc. Franç. Phot., Jan., 1919, p. 104

B. J., 1919, p. 295

Three short papers on the lowering of the horizon line in photographs taken from high viewpoints, the estimation of the height of objects by measurement of their cast shadows in aerial photography, and the limit of permissible angle in vertical or horizontal photography. The papers are chiefly mathematical.

## Cameras for Aviation Photography

S. L. Hughes 083-219

B. J., 1919, p. 293

Very interesting article written by this well-known journalist for the Thornton-Pickard firm describing the way in which aerial photography was introduced into the British Army and the manufacture of the special cameras first made.

## Film Production Situation

E. K. Gillett 122

Mot. Pict. News, May, 1919, p. 3643

A discussion of the desirability of using NI film exclusively. It is pointed out that although France has passed a law compelling the exclusive use of NI film, this law has never been enforced and there is little likelihood that it ever will be enforced. The author does not believe that from a purely manufacturing standpoint a change-over from inflammable to non-inflammable film is a subject to be considered seriously at the present time, though by continued experimental work it may be possible to reduce the cost of manufacture to a point where non-inflammable film will become a commercial reality.

Measurements of the Velocity of  
Focal-plane Shutters

M. Équer and

E. Cousin 2624

Bull. Soc. Franç. Phot., Jan., 1919, p. 91

B. J., 1919, p. 280

The authors employ the method invented by M. Benoist of measuring the speed of shutters by means of singing flames, which give a series of images when the camera is moved at the same time the shutter is operated. They have used this for measuring the variation in speed of a focal-plane shutter as it travels across the plate. Their tests refer to a shutter the slit of which is contained in a sliding plate. They consider that with shutters of the roller blind type the variation will be greater than with the sliding plate. The measurements show that in the camera test the speeds are very different, other things being equal, according as the apparatus is held one way or the other, especially when the spring tension is small. The effect of gravity is also greater as the spring tension is diminished. The exposure obtained at opposite edges of the plate varies considerably, as much as 100%.

- The School of Motion Picture Photography C. L. Gregory 06  
at Columbia University

Mov. Pict. World, May, 1919, p. 905

A course in motion picture photography has been instituted at the Columbia University under the direction of Mr. C. L. Gregory.

- The New Akeley Camera 312

Mot. Pict. News, May, 1919, p. 3650

A detailed description of this novel motion picture camera.

- The Simplex Extra-Lite Shutter 3203

Mot. Pict. News, May, 1919, p. 3451

This projection shutter is of the usual three-opening type, but the blades consist of two layers of perforated wire cloth between which is placed a filler. The function of the filler it is claimed is to prevent light scatter. It is also stated that the perforations result in a 10% to 20% increase in screen intensity without producing travel ghosts.

- The Fulco 5" Hub Reel 3204

Mot. Pict. News, May, 1919, p. 3081

A projector film reel with a 5" diameter hub which results in a more even tension on the take-up, while the reel does not revolve so fast as when using reels having 1½" or 2" hubs. A number of spindle rivets on the hub provide the reel with twenty-one places for attaching the film.

- The Photo-Engraving Trade in England 07

Process Monthly, April, 1919, p. 52

Report of the annual meeting of English employing photo-engravers. A joint Industrial Council for the photo-engraving trade has been decided upon by the federation of employers and the trade union.

- The Making of Pen and Ink Drawings for Reproduction 07001

Amer. Printer, June 5, 1919, p. 37

Many styles are illustrated, Ben Day, ross board, spatter, etc.

- Modern Photo-Lithography A. Herbert 0722

Printing Art, May, 1919, p. 218

Outline of current methods.

- The Present Situation in Printing Ink P. Ruxton

Printing Art, May, 1919, p. 198

Gives a list of 20 dyes important to ink makers which are not yet obtainable. Complains also that American-made dyes are not uniform in shade, and that they are from 5 to 10 times as expensive as German dyes bought before the war.

## Half-tones on Bond Paper

R. Seaver

Printing Art, May, 1919, p. 209

Advantages and methods of making such illustrations effective.

British Photographic Materials and  
Foreign Markets

E. J. Glumart

B. J., 1919, p. 283

Note from a photographer in Switzerland. He states that there is a wide opening there for makers of photographic materials. During the war the German manufacturers have had the field practically to themselves. Ernst Lomberg of Langenberg

has held the market for plates, especially those of ordinary speed made for rotary photogravure positives and negatives. There is a large sale for these plates in all sizes. Panchromatic plates for three-color work are beginning to displace collodion. Lomberg has put on the market a process panchromatic plate which is stated by the author not to be equal to the English plates. There is said to be a good market for plates and films for amateur work and for bromide and other papers. Materials should all have directions and formulæ printed in English, French and German, this being absolutely necessary.

Kodak (Australasia), Ltd.

B. J., 1919, p. 250

Account of financial progress quoted from the Sydney Bulletin.

On the Application of Einstein's Theorem of  
Photochemical Equivalence. I

W. Nernst

Zeits. f. Elektrochemie, 1918, p. 335

Einstein has proposed a very simple application of the Planck quantum theory to photochemical reactions, viz.,  $N = Q/hf$ , where  $Q$  = absorbed heat energy,  $f$  = frequency of absorbed light,  $h$  = Planck's constant,  $N$  = number of molecules decomposed by light. Experimentally (see following abstracts) very few of the reactions followed agree with this,  $N$  being either very much larger or very much smaller. It is suggested that Einstein's law stands to photochemistry as Faraday's law of electrochemical equivalence to electrochemistry. May be, but Faraday's law was reached by experiment, Einstein's so far requires much auxiliary support and adjustment of experiment to help out a theorem.

On the Application of Einstein's Theorem of  
Photochemical Equivalence. II.

L. Pusch

Zeits. f. Elektrochemie, 1918, p. 336

Experimental determination of the formation of hydrobromic acid in light. The amounts formed were much higher than those required by the Einstein law.

The Exchange of Energy in Photochemical  
Processes. VIII.—Photolyses of Aqueous  
Solutions and the Law of Photochemical Equivalence

E. Warburg

Sitzungsber. Preuss. Akad. Wiss., 1918, p. 1228

This is a considerably more valuable paper than the foregoing. The author is also committed to support of Einstein's formula by side-reactions, but acknowledges

that the auxiliary hypotheses sufficient to help it out in gas reactions are insufficient in the case of aqueous solutions. Evidence for this is found both in the experiments of Henri and Wurmser, and of M. Boll, as well as in the present detailed investigation of the photolysis of aqueous potassium nitrate, in which nitrite and oxygen are formed. As cause of the divergence it is suggested that, in solutions, some of the quantum leaks over to neighboring molecules, before decomposition is effected. *Quant. suff.* in fact, and in theory!

#### On Depolarizers in the Becquerel Effect

A. von Samsonow

*Zeits. wiss. Phot.*, 1918, p. 141

Luggin and Goldmann's treatment of the photochemical current with silver halide-platinum electrodes is followed (see Sheppard's "Photochemistry", pp. 272-283). It is now found that complete parallelism is obtained between the depolarizing and desolarizing capacities of nitrates, chlorates, iodates and bromates, that is, the cathodic depolarizers exercise a similar effect on the solarization current of Becquerel's photoelectric cells.

## 2. Physics

#### Mechanical and Osmotic Action of Radiant

F. Michaud

Energy on Medium Traversed. Theory  
of Photophoresis

*Comp. rend.*, April, 1919, p. 770

It is considered that the photochemical intensity factor of radiant energy is the frequency. The general tendency of radiation is toward diminution of frequency. Radiation pressure is a consequence of this and it is expected that for any medium or mixture traversed the chemical potential will be altered in the sense of increase of refractive index.

#### A New Formula for the Spectral Distribution

I. G. Priest

of Energy from a Complete Radiator (Abstract)

*Phys. Rev.*, April, 1919, p. 314

This paper proposes an empirical equation for spectral distribution which agrees with certain observations more nearly than the Planck relation. It permits also the deduction of established Laws of Radiation. The interesting fact that the equation is of the same form as that of the probability law calls to mind the recent work by which the visibility function also may be expressed as a probability equation.

#### Some Experiments on the Eye with

C. E. Ferree and

Different Illuminants

G. Rand

*Trans. Ill. Eng. Soc.*, April 30, 1919, p. 107

This paper recounts a continuation of work published in the Transactions for February, 1918. The illuminants studied include the common forms of electric lamps, the kerosene flame, and incandescent mantles differing in proportions of ceria and thoria, and hence in the color of the emitted light. The tabulated results show the

ratio of the time during which the object (a printed page) is seen clear, to the time during which it is seen blurred, as a function of the duration of the test. It appears that this ratio decreases with departure of the quality of the light from that of daylight, and more rapidly for a blue light than for a red or yellow one. The common opinion of the excellence of the kerosene light does not however appear well founded.

Transmission of Colored Light Through Fog C. L. Utterback  
Trans. Ill. Eng. Soc., April 30, 1919, p. 133

Fogs were produced by the expansion of saturated and dust-laden air in a tube about two meters long, and light sent through the tube fell upon a plate which was examined by the MacBeth Illuminometer. The quality of the light was varied by means of filters. It appears that light between wave-lengths 5300 and 5900 A. U. is most largely transmitted, and that the decrease is more rapid toward the red end of the spectrum than toward the violet.

The Searchlight Projector as Used in the R. C. Harris  
Mercantile Marine  
Electrician, April 11, 1919, p. 444

Deals with searchlight used in the Mercantile Marine, as distinct from those used in the navy or on land. General use, size, design, and installation. Types of lamps, mirrors, lenses and methods of control are discussed.

To Cut off Large Tubes of Pyrex Glass C. T. Knipp  
Science, May 9, 1919, p. 450

The difficulty usually encountered in cutting large tubes of this glass may be overcome by using a length of no. 14 or 16 nichrome wire passed around the tube and sufficient current passed through it to raise it to incandescence. The flame of a hand torch is then played on the wire and glass, and the wire drawn tightly with the aid of pliers which will cause it to cut through the tube.

Co-ordination of Research in Works H. R. Constantine  
and Laboratories  
Electrician, April 11, 1919, p. 455

Proposals for future co-ordination of British research.

### 3. Chemistry

#### (A) General and Inorganic Chemistry

Prevention of the Oxidation (by Dissolved Oxygen) of Sulfites in Solution P. Haller

J. Soc. Chem. Ind., 1919, p. 52 T.

In connection with the analysis of gases used in the catalytic production of sulfuric anhydride, the addition of glycerine to the extent of  $\frac{1}{8}\%$  to the absorbing sodium hydroxide solution resulted in the finding of very appreciably higher sulfite figures, which, it was hoped, approximated closely to the truth.

Chemical Compounds for the Detection of Overheated Machinery and Bearings H. T. Pinnock

J. Soc. Chem. Ind., 1919, p. 78 R.

Two compounds which give promise of considerable utility are (1) silver mercuric iodide,  $\text{AgHgI}_2$ , which changes on heating from pale yellow to vivid carmine at  $90^\circ\text{--}100^\circ\text{C}$ . and (2) cuprous mercuric iodide,  $\text{CuHgI}_2$ , which changes at  $60^\circ\text{--}70^\circ\text{C}$ . from very vivid scarlet to a chocolate brown. The sensitive substances are applied after incorporation with a suitable colorless varnish. The author has had these indicators in use for the past ten years, and the color change is still sharp and distinct.

Basic Exchange in Permutite. I V. Rothmund and  
G. Kornfeld

Zeits. anorg. Chem., 1918, 103, p. 129

An elaborate paper on the artificial zeolites, type permutite, or complex double silicates now used technically in water softening. Both equilibrium and velocity conditions were investigated, and a bibliography of work with artificial "aluminate-silicates" appended.

#### (B) Analytical Chemistry

The Testing of Sodium Bisulfite F. C. VanHeurn  
Chem. Abst., 1919, p. 1064

The method used in the laboratory of the East Sumatra Rubber Planters' Association is to dissolve about 1 gram to 1 liter, and (1) titrate 100 cc. of this solution against caustic alkali using phenolphthalein as indicator, (2) titrate another part of this solution against decinormal iodine and (3) in a third part determine sulfate by precipitation with barium chloride in an atmosphere of carbon dioxide. The difference between the  $\text{SO}_2$  indicated by the second titration and that indicated by the first is calculated to  $\text{Na}_2\text{SO}_3$  and taken as giving the normal sulfite present in the sample.

The Determination of Iodide      W. F. Baughman and W. W. Skinner  
(in Mineral Waters and Brine)

J. Ind. Eng. Chem., 1919, p. 563

Iodide was satisfactorily determined in the presence of bromide and chloride by alkaline permanganate oxidation of the former to iodate, and thiosulfate titration of this after addition of an excess of iodide and acidification with hydrochloric acid. The greatest error found by this method was about 1% of the iodine present. An alternative method is based upon double distillation from ferric sulfate solution; this, however, is both longer and somewhat less accurate.

Note on Kjeldahl's Method for      H. G. Bennett and N. L. Holmes  
the Determination of Nitrogen as Applied to Gelatin

Chem. Abst., 1919, p. 1164

The best results are obtained by from 4 to 6 hours digestion, with potassium sulfate as accelerator.

Detection of Soda and Sulfitic Wood Pulp

R. Wasicky

J. Soc. Chem. Ind., 1919, p. 131A.

It is claimed that after the following treatment pure soda-pulp papers are uncolored while sulfite papers are stained a deep violet, and that by the use of known standards the method is accurate to about 5%. Boil sample with a 0.2% solution of Gentian Violet, leave 2 minutes, rinse with 95% ethyl alcohol, immerse for 2 minutes in 95% ethyl alcohol containing 0.5% hydrochloric acid and wash for 15 minutes in 95% ethyl alcohol renewing the latter once, and finally with water.

The Quantitative Analysis of Tungsten

P. Jannasch and R. Leiste

Compounds in a Current of Carbon Tetrachloride

J. f. prakt. Chem., 1918, 97, p. 141

Details of the separation of tungsten as volatile chlorides and decomposition of these by acidified water, the whole of the tungsten being obtained as tungstic acid.

## (C) Colloid Chemistry

Setting Points of Gelatine Sols

A. Cobenzl

Chem. Zeit., 1918, p. 533

It is recommended to observe three "points" in the setting process. (1) When the solution shows rills in the side of containing test tube. (2) When 10 mm. bubbles rise slowly in the liquid. (3) Complete setting, when air-bells can no longer follow the movement of the mass. Long standing and especially heating alter the setting points, also acids and alkalies. A solution of 12.5 grams Stoess gelatine in 250 cc. water was used. The use of *glycolic acid* as a substitute for citric acid is mentioned: it is stated to have proved a completely satisfactory substitute in acid emulsions for D. O. P., although the quantities instanced appear very large for such use.

**A Study of Beater Consistency Changes.  
The Hydration of Cellulose as  
Applied to Papermaking**

W. H. Gesell and  
J. E. Minor

Paper, May 28, 1919, p. 15

The hydration of cellulose in the beater is considered to be due to a process of bringing into action the electrostatic charges of the colloidal cellulose complex; selective adsorption of hydrogen or hydroxyl-ions increasing the hydration and forming a loose gel. It is this which gives the characteristic slowness to the stock. It is quite possible for this hydration to proceed along several different lines and to give different results; this depends upon intramolecular re-arrangements, upon the suppression of certain affinities by action of benzene, salts, etc. The cutting of the fibers causes a rapid subsequent hydration. Approximate estimate for mill control of difference in hydration and length of fiber of two samples of the same or different furnishes may be made by comparison of results with both the Snowshoe and Green sieve tester. The Green tester indicates differences in hydration, the Snowshoe differences due both to change of fiber-length and hydration. An improvement in the Green tester is suggested, and a bibliography of recent literature appended.

**Absorption of Light by Turbid Media:  
Application to the Nephelometry  
of Suspensions**

C. Chéneveau and  
R. Audubert

Comp. rend., April, 1919, p. 766

A formula is obtained for the transmission co-efficient of a heterogeneous suspension involving two constants, depending on the nature of the grains and the wavelength of light used. The formula was found satisfactory for suspensions of silver chloride, mastic and barium sulfate and indicates that by direct measurements of the transmission co-efficient it is possible to determine the mass in suspension.

**The Color of Colloids. V.—Metallic and  
Vitreous Luster**

W. D. Bancroft

J. Phys. Chem., 1919, p. 289

An interesting compilation of the definitions and opinions of Dove, Brewster, Stokes, Rood, Brücke, Helmholtz and Spring. It is concluded that there is no sharp dividing line between metallic and vitreous lusters, but that the latter is obtained when transparency of reflectors is increased.

**The Color of Colloids. VI.—Blue Eyes**

W. D. Bancroft

J. Phys. Chem., 1919, p. 356

It is concluded that Tyndall's opinion is correct. In blue eyes there is no pigment on the front of the iris; the blue color is the color of turbid media, and is purer, the finer the suspended particles. When the uvea is lacking, the color of the blood shows through and we have albinism. It is suggested that experiments with turbid media would settle the matter.

## From Eastman Kodak Research Laboratory

### Lens Bench Determinations of Focal Length Report No. 663

019

Deals with focal length determinations, the object being at a finite distance. When lateral shift of the image vanishes for a small rotation of the bench turntable the lens does not pivot on the rear principal point but on a point now generally known as the "null-point", a point whose position changes when the object distance is changed. Only in the special case of coincident principal points do null-point and principal points coincide.

The complete formula for focal length is derived and discussed with special reference to the error introduced in a determination when the assumption is made that the lens pivots on the rear principal point and the object distance is that usually used.

For short focus lenses with principal points close together the error is negligible but if the principal point separation be considerable an erroneous value for the focal length will be obtained unless the complete formula is used. Examples are given showing the error introduced by the old reduction in actual cases of long focus and telephoto lenses.

## Books

### Recent Accessions to the Library:

#### The Preparation of Organic Compounds

E. deB. Barnett

J. and A. Churchill, London

This volume consists of a large number of experimental directions for organic chemical preparations. It is regrettable that the work should bear so many traces of hasty compilation, and lack of authenticity; one feels that the author has in most cases never conducted the preparation himself and in some others prepared the abstract without reference to the original publication. The book also suffers from a paucity of references to the literature. With all these defects, however, it remains a work of great value, covering a field which has hitherto been covered either very lightly by the small laboratory text-books, or very densely, by German compilations such as those of Friedländer and Vanino.

#### Patents as a Factor in Manufacturing

E. J. Prindle

Engineering Magazine Co., New York

This little volume, by one of the leading New York patent attorneys, is part of the Works Management Library issued by a prominent technical magazine. It contains a clear and simple exposition of the nature of a patent, the protection it may afford, its commercial advantages, the general rules used in court in construing a patent and stopping infringement, and the way in which contests between rival claimants to an invention are handled. It is not, and moreover is not intended to be, a full exposition of the subject. Nor is its purpose to make every inventor or manufacturer his own patent lawyer. But, intelligently used, it will cause the patent lawyer to be consulted early enough and will work for better co-operation between client and attorney.

**Surface Tension and Surface Energy and  
Their Influence on Chemical Phenomena**

**R. S. Willows and  
E. Hatschek**

**J. and A. Churchill, London**

This book gives a very clear statement of the physical character and measurements of the surface tension and surface energy. The connection between capillarity and chemical phenomena suffers however by omission of notice of the work of Harker and Langmuir.

**Elementary Photographic Chemistry**

**E. K. Co.**

A simple account of photographic chemistry, in a form suitable for the practical photographer.

## **Patent Abstracts**

### **U. S. Patents**

**1300887**

**J. Shaw. K/24**

**Assigned to Rainbow Pictures Corporation**

A Motion Picture Color Method in which successive groups of six pictures are taken, alternate ones of which are of red color selection and the others being of green, yellow and blue color selection. The positives made from the pictures are projected through alternate red and green color filters, the green, yellow and blue color selection images being colored by the green filter.

**1301265**

**F. W. Hochstetter. K/24—K266**

**Assigned to H. P. Patents and Processes Co., Inc.**

A Color Filter for Motion Picture Machines comprising a revolvable disk containing a series of color screens through which the pictures are taken. They are later projected through similar screens.

**1303506**

**H. Shorrocks K/43 K/24—KJ88**

A Method of Coloring Photographic Positives in Black and White which have been made from negatives taken through red and green color screens. The future red pictures are bleached, while the future green pictures are protected against the bleaching action. The pictures are then subjected to the action of a combined green toning and red dyeing solution, so that the green and red pictures are produced simultaneously in a single bath. A vanadium toning bath is used with a rhodamin red dye.

**1298641**

**F. W. Barnes and E. C. Allen. K2115**

**Assigned to E. K. Co.**

A Camera Intended Primarily for Use with Two-Color Work. The negatives are placed at right angles to each other, one of them parallel to the axis of the camera lens. A swinging mirror throws the image upon one sensitive plate and then is thrown out of the way, permitting the image to fall upon the other sensitive plate.

1299431

A. Dawson K2116

A Camera for Three-Color Work in which two intersecting semi-transparent mirrors are placed in the body of the camera. One reflects a portion of the light to one side, while the other reflects a portion to the other side, while some of the light is transmitted through both mirrors to the rear of the camera.

1299479

F. W. Kent and T. P. Middleton. B1375  
Assigned to Kerotype, Ltd.

A Method of Making Photographic Printing or Transfer Paper, in which the paper is passed through melted paraffin wax, then buffed, then sub-coated with porous nitrocellulose and then coated with a sensitive stratum.

1302777

E. B. Downing G5

A Method for Determining the Strength of Developer which consists in submitting to it a strip of material upon which is light-printed a series of numbers. The strip is fed into the developer so that one number is added every second. When the entire strip has been fed into the developer it is at once all withdrawn and placed in a stop bath. The first distinct visible image indicates the strength of the developer and from it can be determined the proper time of development for negatives.

1300616

F. E. Ives J88

A Process of Making a Colored Image which consists in copper toning a silver image, thus producing a red colored image and in re-enforcing this with a red dye which is mordanted to the copper-toned image.

1300114

A. Brock, Jr. 083—219

A Camera for Use with Roll Film of Large Size. The film passes behind a sheet of glass and in front of a sheet of metal, so that it is held flat in the focal plane.

1301967

S. Parks 083—2626

An Apparatus for Taking Photographs from the Air in which a trip is placed upon a kite line at a predetermined point. A camera with wing vanes is then propelled by the wind along the kite line until it strikes the trip, which causes the vanes to collapse and simultaneously trips the camera shutter. The camera then returns to the ground along the kite line.

1300716

J. Frolek 083—2614

A Mount for Cameras consisting of a support swiveled in the mooring cable of a captive balloon. A wind vane holds the support in a fixed direction.

1303635

J. G. Capstaff. 1377—G8  
Assigned to E. K. Co.

A Photographically Sensitive Element having a base upon which is a insoluble layer which is moderately light-sensitive. Superposed on this is a highly sensitive soluble layer. An exposure is made in the camera upon the outer layer without affecting the lower layer. This outer layer is developed and a print is made through it upon the lower layer. The outer layer is then washed off and the lower layer developed, thus making a positive print.

1303732

C. J. and T. A. Sibbald 2152

A Camera having an Indicator which appears before the red window in the back of the camera to show whether or not the film in position has been exposed. The window shows only the usual mark on the back of the film if it has not been exposed, but when the shutter is operated, a signal is swung into position before this window. The winding of the film spool restores the signal.

1303742

W. H. Touchette. 2152

Assigned  $\frac{1}{2}$  to F. R. Clement

A Double Exposure Prevention Device in which actuation of the shutter interposes an obstacle in front of the winding means and also locks the shutter against a second actuation. The film must be wound to move the obstacle and unlock the shutter before another exposure can be made.

1301815

W. J. Burrows and H. B. Lawrence 2193

A Camera with Dark Room Attachments so that the plate after exposure can be developed and fixed and then a print may be made therefrom and also developed and fixed within the same casing. Light-tight openings are provided through which the operator may insert his hands to manipulate the accessories within.

1303193

E. L. Gilmore. 221

Assigned to Vitaslide Co.

A Projector designed particularly for use with lantern slides having moving parts to give motion picture effects.

1302359

F. E. Garbutt 2107

An Iris intended for use particularly on motion picture cameras, by means of which the field of the camera is rendered elliptical in shape. It may be adjusted to various sizes.

1298791

W. A. Riddell. Assigned to E. K. Co. 215

A Folding Camera for Roll Film in which a telescoping removable back has ends embracing the spool holders.

1299992

A. Z. Myrup 2151

A Camera for use with Roll Film in which provision is made for swinging the film-carrying spools out of the way to permit focusing. A spring-wound translucent curtain is used as a focusing screen.

1298723

D. M. Hurlburt. Assigned to E. K. Co. 2152

A Roll Film Camera in which the winding handle lies within a recess. When the film is wound, guards cover this recess, locking it against further winding. Operation of the camera shutter causes the unlocking of these guards and the shutter cannot again be operated until the user has opened the guards and wound the film, which releases the shutter for another operation.

1303676 H. C. Jones 222

An Enlarging Apparatus with provision for automatic focusing. The plate holder is stationary and a rack and pinion is provided for moving the easel at a constant rate. The same operating means is connected by a cam screw to the lens board to move it at a variable rate so as to maintain the easel constantly in focus.

1299229 G. W. Romer 24

Sheet Metal Tongs for handling photographic prints.

1303418 G. E. Torsio 241

A Printing Machine in which there are movable edge masks which bear disks having stencil characters thereon to be light-printed upon the margins of the prints. It is intended for use by amateur finishers and when the order is completed the numbers are trimmed from the edges of the prints.

1303774 C. C. Cooper 247

A Printing Frame designed particularly for making blue prints. It consists of a curved base with a fixed clamp at one end which clamps the negative and printing paper and an adjustable clamp at the other so that different sizes of the paper may be used.

1302700 J. R. Oliver 2541

A Film Developing Device consisting of an annular tank in which is placed a foraminous apron against which a strip of film is clamped.

1302408 W. C. Motteram 2542

A Tank for Developing Photographic Film Packs. At the time of the exposure the tabs are not torn from the film pack, as is usual. When all of the films have been exposed, the pack with the attached tabs is placed in the tank and a series of clamps engage the ends of the tabs. The films are then drawn into compartments in the tank where they may be developed.

1300412 H. B. Jones. Assigned to Klix Mfg. Co. 2613

A Tripod with means for independently adjusting the length of the legs. These are made telescoping, the elements being screw-threaded one in the other and a locking lever is provided to hold them in an adjusted position.

1298755 A. J. Matter and F. V. Conley 2621

A Shutter with Hinged Flaps intended primarily for studio use equipped with pneumatic operating means.

1297327 E. W. Dakin and E. E. Underwood. 2626  
Assigned to E. K. Co.

A Cable Release in which the central member is a closely wound coil. This is surrounded by another coil which is held in an inextensible stocking. An improved tip for attachment to the shutter is provided.

1300825 D. Doncheff 2626

A Camera Attachment including a time-controlled mechanism for automatically operating the shutter on a camera after a predetermined period. It consists of a clock-work with a governor. Both visible and audible signals are provided to notify the subject just before the exposure is made and just after it is completed.

1301264 F. W. Hochstetter. 2629

Assigned to H. P. Patents and Processes Co., Inc.

A Light Regulator for Projectors which consists of a movable mask or frame between the components of the lens. It is designed to cut out the marginal rays.

1301819 F. P. Clark. Assigned  $\frac{1}{2}$  to J. P. Coffin 2645

A Focusing Finder Attachment consisting of a folding mirror which reflects the image from a finder lens upon a foldably mounted ground glass above the camera. The finder lens is attached to the frame of the principal lens, so that movement of the lens mount to focus the finder lens also focuses the principal lens.

1302255 E. E. Webster 2645

A Focusing Device for a Camera in which a telescope is mounted transversely of the camera bed upon the lens board. The user looks at the subject through this telescope and focuses it correctly. By a cam arrangement between the telescope adjustment and the lens board adjustment the lens will be properly focused for the distance of the subject.

1300056 F. S. Tyrrell. 2653—E1211

Assigned to Burke & James, Inc.

A Roll Film for Use in a Hand Camera, the backing paper of which is coated with collodion or a nitro-cellulose preparation to prevent injurious action by the material of the paper or printed matter thereon upon the sensitive emulsion.

1299030 F. C. Reynolds. Assigned to J. B. Moore 2671

A Distance Finder for Cameras in which a pendulum-operated pointer gives a reading adjacent to the view finder. The view finder is so held that the base of the subject is registered with an index line and the position of the pointer is then noted.

1300613 H. Hess. Assigned to Hess-Ives Corporation 2683

A Camera Provided with an Actinometer of the type in which the light-sensitive element is darkened upon exposure to light. The setting of the actinometer starts a timing device which automatically changes the adjustments of the camera, so that when the operator stops the actinometer exposure the camera will be set for the correct exposure corresponding to the light conditions.

1300178 G. Lane 0649

A Process of Producing Legends on Motion Picture Film which comprises forming the legend in opaque characters on a transparent sheet, making a contact print from this and photographing this negative upon motion picture film.

1301538

L. S. Brainard 067

An Apparatus for Taking Motion Pictures which comprises a Projector for throwing upon the screen a series of cartoons. The projectors may be disconnected and living actors take their place upon the same stage, so that the complete series of pictures includes a series of views of the projected cartoons and of the actors.

1299323

G. R. Goergens 3101

A Multiplying Gearing is provided for attachment to a motion picture camera to speed up the rate of taking pictures.

1302388

S. M. Lawhun. Assigned  $\frac{1}{2}$  to J. L. Perlman 3105

A Motion Picture Camera in which means is provided for moving the film away from the exposure area in line with the lens and while the film is protected from light the lens may be focused through an opening provided for that purpose.

1300773

H. J. Quick 3106-2102

A Focusing Device particularly intended for motion picture cameras consisting of a lever arm, one end of which adjusts the lens and the other end of which is moved across a scale marked with distances and stop data.

1300806

C. E. Akeley 3106-2102

A Focusing Lens Mount in which the lens tube carries threaded projections extending through longitudinal slots in a barrel. A threaded ring mounted to rotate on this barrel engages these threads, thus adjusting the lens. In the embodiment described, a focusing finder lens is mounted to operate with the principal lens of the camera.

1299469

O. J. Holmes 3201

Motion Picture Film and Film Sprocket for use therewith, in which the film is provided with additional openings between the picture areas with which co-operate special teeth on the sprockets. The film is non-inflammable and this provision is made to insure the use of the right kind of film with the machine.

1300057

C. Uebelmesser. 3202

Assigned to Cru Patents Corporation

A Motion Picture Machine having Removable Film Guides with means for normally holding the guides in inoperative position and a pressure member controlled by the tension of the film to release the guides.

1299956

A. P. Jurgensen 3203

A Shutter for Motion Picture Machines having areas which are alternately transparent and covered with a fine wire mesh.

1300257

M. J. Felland 3203

A Motion Picture Projector Reel that has a spring-pressed arm, one end of which bears against the outside of the roll of film. The other end is adapted to make a contact, closing an electric circuit so as to ring a bell when the reel is nearly empty.

1302579 M. E. Meyers and M. J. Harper 3203

A Motion Picture Machine having an Anti-flicker Shutter comprising two transparent sectors and two sectors consisting of metal nets between which is a translucent layer. One of these semi-opaque portions is the cover which passes the exposure position during the movement of the film. The two transparent portions and the other semi-opaque portion pass the exposure position while the film is stationary.

1298395 B. A. Proctor. 3208

Assigned to Kinoikon Apparatus Corporation

An Automatically Compensated Take-up Reel for motion picture apparatus in which there is a friction clutch. A spring forces the members of the clutch together and the tension of the spring is automatically varied, depending upon the amount of film on the reel, so that there will be greater tension when the reel is nearly full.

1299566 R. J. Emory. 3208

Assigned to Baird Motion Picture Machine Company

A Motion Picture Machine in which the take-up reel is supported on a weighted lever beneath the machine. The tension between the driving belt and the take-up reel will increase as the reel is filled with film, thus increasing its weight upon its support.

1299612 J. F. Reney. 3208

Assigned to Baird Motion Picture Machine Company

A Motion Picture Machine in which the take-up reel is supported upon a spring. As the reel is filled with film its increasing weight causes it to be lowered and to increase the frictional contact between the driving pulley and the belt.

1301081 R. J. Emory. 3209

Assigned to Baird Motion Picture Machine Company

A Motion Picture Projector in which a governor mounted on the driving shaft causes a fire shutter to remain open as long as the speed remains above a certain rate.

1302801 C. F. Jenkins. Assigned to The Graphoscope Co. 3209

A Motion Picture Apparatus in which a governor on the driving shaft controls a shutter which falls to protect the film when the speed is below a predetermined rate.

1302802 C. F. Jenkins 3209

A Screen for Suppressing Heat Rays in Motion Picture Projectors consisting of a foraminous plate or net-work of copper or other good conductor of heat.

1302800 C. F. Jenkins. Assigned to the Graphoscope Co. 321

A Picture Projector consisting of a standard upon which is mounted a platform bearing the various parts of the projector. The platform is mounted to be swung vertically or horizontally.

1299792 I. Serrurier 323

A Compact Motion Picture Projector Carrying its Own Screen which can be folded up against the rest of the mechanism. A lazy tong arrangement carrying a series of rolls permits the use of endless film, or the usual supply and take-up reels may be used.

1301045 A. L. Edmison and J. Rikkelman 323

A Combined Motion Picture and Sound Reproducing Device in which the horn from a phonograph is mounted in a cabinet with both the instrument itself and its end covered with a translucent cloth screen. A projector also mounted within the cabinet throws upon this screen the motion picture images.

1303217 M. de la Fontaine 323

A Combined Phonograph and Motion Picture Projector. A disk carries a series of pictures which are intermittently moved into line with a small projecting lamp which throws them on a screen mounted upon the casing with the other mechanism. It is connected to operate in time with the phonograph.

1303543 H. A. DeVry. 323

Assigned to The DeVry Corporation

A Motion Picture Projector in which the film may be placed edgewise into the feed mechanism, so that portions only of the film may be projected without running the entire film through the machine. Provision is made for rewinding the film without displacing either reel so as to exhibit a portion of the film a second time.

1303542 H. A. DeVry. 325

Assigned to The DeVry Corporation

A Motion Picture Projector which is portable and contained in a fireproof casing. The lamp box contains a filament lamp and special provision is made for ventilating.

1300247 J. C. Chambers 329

A Motion Picture Projecting Machine in which a weighted roller bears against the film. Should the film break, a shutter is actuated to drop in the path of the projected light.

1299266 F. B. Thompson 358

Apparatus to be used in Connection with a Developing Machine for motion picture film and operating to wipe from the film the free moisture. The film passes rollers which remove a large part of the moisture and thence past a buffer with flexible pieces of skin or other material, which removes still more.

1300805 C. E. Akeley. 361

Assigned to Akeley Camera, Inc.

A Support for Motion Picture Cameras in which the camera can be moved on either a vertical or horizontal axis.

1300656 R. S. Scheiblein 387

A Machine for Cleaning and Waxing Motion Picture Films, the machine providing novel means for first brushing the film, then wiping it and then waxing the perforated edges.

1302919 J. A. H. Hatt 0722

Process of producing printing plates which consists in preparing sensitive coating on metal, then transferring to it an impression by offset from some design already made for a printing surface, exposing, developing, and finishing as usual. Suggested for making lithographic transfers especially for multicolor photo-lithography.

1300729

W. C. Huebner 07225

A Process for Preparing Grained Line Negatives or Positives and producing printing plates therefrom. An ordinary negative or positive is made, retouched and printed on to a bichromated gelatine solution containing calcium chloride, or some similar sensitive solution that will reticulate and so give a grained result. This grained collotype is then inked up or otherwise blackened so that it will serve as a negative or positive to make the required print on metal.

## British Patents

124608

E. W. Smith M0733

Photo-mechanical Printing Surfaces. A half tone screen is prepared by producing on a lithographic stone, zinco block or plate, etc., a line, granular stipple, or other configuration, rolling up with printer's or other varnish, and transferring the design by means of a rubber-covered roller to a glass plate. The glass plate is then dusted with an opaque glass enamel, glass powder, or the like, and fired to produce a permanent screen, or with any dusting powder, and without fixing, to produce a non-permanent screen.

123997

C. M. Williamson 083-219

Cameras. Cameras for Taking a Series of Photographs from Aircraft are driven by a propeller opposed to the wind, and governing means are provided to maintain the driven mechanism at a constant speed without regard to the varying wind velocity.

123998

C. M. Williamson 083-219

Cameras. The Disk is Mounted on a Shaft which is rotated by gearing from a propeller driven by wind pressure. An arm is pivoted on a crank-pin carried by the disk, and is guided by a pin working in a slot formed in a plate. The slot is shaped so that the claw attached to the arm moves upwards, downwards, and forwards in succession so that it engages in holes in the sensitive film and moves it forward intermittently. The edge of the disk is formed as a cam which acts on the roller carried by the lever so as to actuate the punch just before the claw engages with the film. At the same time, the spring moves the sleeve into contact with the film to facilitate the withdrawal of the punch. A needle point is attached to the claw to feed the film forward before sufficient holes have been punched.

123999

C. D. M. Campbell and 083-219  
C. M. Williamson

Photographic Cameras. Relates to Cameras for Use in Connection with Machine Guns, and consists in giving the cameras a casing of the form and dimensions of the magazine thereof, to be bolted in the usual position of the magazine so that photographs may be taken along an axis parallel to and adjacent to what is normally the line of fire. A lens tube and sights may be provided on the camera. Clockwork mechanism within the camera may be provided for feeding a film, and the mechanism may be started by a release lever operated by the gun trigger.

124225

F. C. V. Laws

083—219

**Photographic Cameras.** Relates to cameras of the kind employed on aircraft for taking a number of photographs in a short space of time at varying intervals at the will of the operator. Interchangeable locking means are provided for enabling the camera to be operated either manually or by means of an air-screw.

124636

Newton, Wright and Titchfield

214

**Cameras.** A folding camera particularly of the pocket type, has a tail-board hinged to the sliding front which carries the lens, the tail-board being adapted to slide in guides in the baseboard and body and, when the camera is folded, to cover the dark slide or its carrier.

124645

S. P. Twemlow

215

**Roll Film Cameras.** The reel-pins are normally held out of operative engagement with the spool by springs. When the spool is inserted, the pin is pressed into operation engagement with the spool and a spring catch springs over the projection on the pin and holds it. To remove the spool, the catch is disengaged and the pin springs out. Similar pins and catches may be used at both ends of the spool and released simultaneously by a cross-bar having projections at each end to disengage the catches.

124639

H. W. Moyné

2237

**Easels.** An easel for use in enlarging or for contact printing comprises a substantially vertical frame having a flap hinged and maintained closed against a sheet of glass or a negative by means of a weighted arm.

123842

S. A. Flower

0649

**Cinematograph Films.** In cinematograph films, the pictures are illustrated by the application thereto of words or numerals so disposed that they appear to issue from the speaker's mouth, the words or the separate letters of the word being successively displaced.

124648

H. W. Abbott

3203

**Cinematograph Shutter.** A cinematograph shutter comprises an opaque sector, open spaces and a sector, in which are two openings and a group of slots arranged at right angles to a radial line. The shutter is secured to its spindle by means of a bracket provided with sliding pieces which are adjusted by screws so as to grip the spindle. The bracket carries a screw which, when the shutter is placed on a collar forming part of the bracket, enters one of a number of positioning holes in the plate secured to the shutter. A nut holds the shutter in position on the bracket.

124058

E. Schieronì and R. Frigerio

325

**Cinematographs.** In machines for films with several horizontal sets of photograms, the slide carrying the film is horizontally displaced by means which serve also as a guide during the longitudinal displacement of the film.

PA 65341

Monthly  
**ABSTRACT**  
Bulletin



August, 1919

Issued by the Research Laboratory  
**EASTMAN KODAK COMPANY**  
Rochester, New York



# Monthly Abstract Bulletin

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August, 1919

## Erratum

In the *Abstract Bulletin* for June, 1918, on page 110, line 5, for "*Advertising Plates*" read "*Advertising Slides*".

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## Addition to Numerical Classification

2676 Spirit Levels.

# 1. Photography

- The Theory of the Becquerel Effect A. Goldmann 011  
*Zeits. f. Elektrochemie*, 1915, *21*, p. 73

The Lenard-Hallwachs so-called photo-electric effect is, as shown by Krüger, actually a photo-chemical effect, the electric charges being secondary. Goldmann shows that the Becquerel effect with silver halides is sensibly of the same type as the recognized photo-electric effects in non-aqueous systems.

- Sensitiveness in Metric Measure K. Schrott 015  
*Zeits. wiss. Phot.*, 1915, *14*, p. 223

Rotary slit sensitometer and a density comparison device are described.

- The Design of Lenses for Aerial C. W. Frederick 019—083  
 Photography  
*J. Opt. Soc. Amer.*, Jan.-Mar., 1919, p. 34

A statement of some of the special needs in lenses for aerial photography, with a description of the types which were designed and constructed by the Eastman Kodak Company, to meet these needs. It is shown that the design of these lenses is such that small differences can easily be corrected after the lens is assembled— a matter of importance in high priced lenses.

- Where We Stand in Color Photography K  
*B. J. Col. Sup.*, 1919, p. 21

General review of the present position.

- The Light-Filter in Autochrome B. E. Havelock K2664—K/33  
 Photography  
*B. J. Col. Sup.*, 1919, p. 22

Discussion of the effect of the compensating filter on focus.

- Development Papers and Desensitizers W. C. Mann A13  
*Phot. J.*, 1919, p. 184

Publication of paper of which brief abstract was given last month. Interesting in connection with spots appearing on developing papers.

- Masked Prints with Printed-In Border E. A. S. J3—243  
 Tints  
*B. J.*, 1919, p. 314

Gives details of a simple method of registering printed-in border tints on prints.

## Glazing Troubles and Remedies

C. B. Barnes L6

B. J., 1919, p. 316

For preparing glass for glazing, fresh ox gall is recommended. A trouble consisting of a crop of dull marks is considered to be due either to over- or under-washing of the prints—frequently the former. A print that has been allowed to soak is found to decompose on the surface; which produces this marking.

## Radiation Detection in X-Ray Work

R. E. Slade X089

Chem. Eng., June, 1919, p. 131

An analysis of the problem of detecting flaws in metals by means of X-rays.

## The Caldwell Portable Roentgen Ray Outfit

C. N. Moore X41

Amer. J. Roent., May, 1919, p. 243

Description of portable X-ray outfit, weighing complete 108 pounds.

## Practicus in the Studio—Something About Lenses

031—2638

B. J., 1919, p. 349

Hints on the selection and use of studio lenses.

## Home and Garden Portraiture

0313

Photo Miniature, May, 1919

## Practicus in the Studio—Photographing Children

0314

B. J., 1919, p. 312

## Practicus in the Studio—Portraits of Elderly People

0314

B. J., 1919, p. 333

This deals with the types of lighting which are suitable for elderly sitters.

## Stereoscopic Photography. II.

C. E. B. 043

B. J., 1919, p. 307

Practical Hints.

## Stereoscopic Photography. III.—Stereoscopic Portraiture

C. E. B. 043

B. J., 1919, p. 346

083

Mr. A. Dordan-Pyke gave a lecture on the importance of photography in the war. He described experiences with applicants for the Photographic Section, discussed the supply of photographic chemicals during the war and gave an account of experiences at the front.

B. J., 1919, p. 341

## Aerial Cameras

F. C. V. Laws 083—219

Phot. J., 1919, p. 192

Discussion of aerial cameras by the officer of the British Photographic Section who designed the L camera. He traced the evolution of the different types of aerial cameras and of the appliances designed for their use. A notable example of these was the anti-vibration frame constructed to hold the camera firmly to isolate it from the vibrations of the aerial machine. The training of men for photographic work was illustrated by a series of official diagrams from which the airman could learn the effect of making exposures at too great or too small a height or of having the lens axis of the camera at an angle to the vertical.

## A Method of Multiple Gum-Printing

C. Macnamara /88

B. J., 1919, p. 320

Description of the operations used in making prints by the gum bichromate process.

## Camera Movements. I.

D. Charles 210

B. J., 1919, p. 331

Introductory article enumerating the various movements and attachments to a camera.

## Camera Movements. II.

D. Charles 210

B. J., 1919, p. 348

Gives a detailed explanation, with diagrams, of the function of the rising front and swing back.

The Evolution of Aerial Cameras  
during the War

C. M. Williamson

219—083

B. J., 1919, p. 309

Describes a number of the cameras made for the British Air Force. These include the automatic camera known as Type F, using film and arranged to give 250 exposures, 4 x 5 in. in size, the film being given an intermittent traveling motion by means of a claw-punch movement. Ordinary cine negative film was used in 4 in. width. The L-type British camera designed by Major Laws was made by Williamson, as was a later model LB, made to take lenses of focal length up to 20 inches. In the LB camera the shutter was fitted interchangeably so that it could be removed without disturbing other parts of the mechanism. The latest model designed was the LF camera taking 40 18 x 24 cm. photographs on film, the action being similar to the L type cameras but with an intermittent pressure pad to keep the film flat and rigid at the moment of exposure.

Adapting the Half-Watt to Gaslight  
Enlarging

J. C. 222—046

B. J., 1919, p. 319

Description of method of using the nitrogen tungsten lamp in a vertical position, using a mirror so that the enlarger itself can be placed vertically. The author found that some anastigmats do not work to focus in enlarging, while a portrait lens did.

- Filters for Panchromatic Plates J. McIntosh 2661  
B. J., 1919, p. 317

General article on the preparation of gelatine light filters.

- Instrument for Recording Intensity of Daylight F. A. Swan 2682  
Elec. World, May, 1919, p. 897

The resistance of a tungsten filament varies with the amount of incident light. An instrument having a tungsten filament, connected to a Wheatstone bridge, was made. The bridge setting was indicated by a galvanometer. Galvanometer is connected to a relay, and the action of this relay causes a slider to move until bridge is again in balance. The slider carries a pen arm and chart is thus traced.

- Relief Half-Tones, Screeniness in Half-Tone Engravings, 07  
and Reproductions of X-Ray Negatives  
B. J., 1919, p. 322

Brief notes on three subjects of interest to engravers.

- Etching Through Solids in Zinc Plates 07006  
Process Monthly, May, 1919, p. 71

Due to want of homogeneity of ink coating; remedy suggested is to use leather roller followed by composition roller for application of ink.

- Photo-Engraved Advertizing Novelties. Re- A.J. Newton 0733  
production of "Matt-Surface" Originals  
B. J., 1919, p. 355

Proposed International Joint Conference Council in the Printing Trades. Outline of the constitution of a joint council to regulate conditions in the printing industry (including photo-engraving) in America.

Photo-Engravers' Bulletin, June, 1919, p. 5

- Books on Color Photography  
B. J. Col. Sup., 1919, p. 24

List of books on the subject at present available. This should be useful in answering inquiries on this subject.

- Ultra-Violet Light in the Chemical Arts. XXII. C. Ellis and A. A. Wells  
(Chem. Eng., 1919, p. 49)

Some further conclusions regarding the absorption spectra of some of the fatty acids and esters. Absorption spectra of alcoholic derivatives of benzoic acid.

- Photo-Electric Spectrophotometry by the Null Method (K. S. Gibson). See 2.  
Stable Silver Nitrate Solution (F. Liebert). See 3 B.

## 2. Physics

### Protection of Silvered Surfaces

F. Kollmorgen

J. Opt. Soc. Amer., Jan.-Mar., 1919, p. 16

The first attempt to furnish protection to silvered surfaces was by means of bi-chromated gelatine, by Izarn in 1894. Since then various lacquers have been tried. The author finds that Lastina lacquer is the best. Centrifuging solves the problem of applying the lacquer in a uniform layer sufficiently thick to eliminate interference colors. Such protected mirrors are used in periscopes.

### An Optical Lever Manometer

J. E. Shrader and

H. M. Ryder

Phys. Rev., May, 1919, p. 321

Description of gage for the precise measurement of pressures between .001 and 4.0 mm. of mercury. Pressures are read by observing the deflection of a beam of light or may be automatically recorded by a photographic device. Reproductions of photographic records are shown.

### Instruments for Showing the Presence and Amount of Combustible Gas in Air

E. R. Weaver and

E. E. Weibel

J. Frank. Inst., June, 1919, p. 745

Abstract of Bureau of Standards paper describing three instruments for this purpose; the action of one depending on the resistance change of an electrically heated wire placed in the gas, the second upon the heating effect upon an adjacent bimetallic strip, and the third upon the light emanated from the heated wire.

### Scattering of Light by Solid Substances

R. J. Strutt

Proc. Roy. Soc., June 4, 1919, p. 476

The observations already published on scattering of light by gases and liquids led to an examination of solids in this respect. The light scattered in the interior of various samples of glass and quartz was examined at right angles to the path of the incident beam. The amount of scattering and the degree of polarization vary greatly with different samples. This suggests that the scattering is due chiefly to inclusions rather than to molecules. Clean quartz scatters very little light as compared with glass. With proper polarizing devices the rotatory action of quartz is made distinctly visible by the scattered light.

### Present Status of Industrial Lighting Codes

G. H. Stickney

Trans. Ill. Eng. Soc., June, 1919, p. 153

Discussion of the various lighting codes adopted by several states and in Federal establishments. Points out that Government regulation of factory lighting is needed. The existing codes deal chiefly with the intensity, glare limit and distribution factors. An extensive bibliography of the subject is given.

The Design and Inspection of Certain  
Optical Munitions of War

A. C. Williams

Trans. Opt. Soc., Jan., 1919, p. 97

A short account of methods of testing optical instruments for war use, in particular telescopes, binoculars, range finders and mirrors.

War-Time Development of the Optical Industry

F. E. Wright

J. Opt. Soc. Amer., Jan.-Mar., 1919, p. 1

An account of the condition in the optical industry in the United States before the war, the steps taken to meet the crisis, and the measure of success attained.

The Future Needs for Testing and Research  
in the Optical Industries

P. G. Nutting

J. Opt. Soc. Amer., Jan.-Mar., 1919, p. 7

A plea for organized and systematic research in optics in general, with a summary of particular problems in some special fields of optics, as lens designs, photography, physiological optics, and colorimetry.

Measurement of Capillary Constants of Viscous  
Liquids by Means of Interference Fringes

H. Nisi

Sci. Abst. Physics, 1919, p. 200

Free surface determined by Fizeau's dilatometer as improved by Abbe and Pulfrich with observing telescope replaced by small camera with eye-piece for visual observation. Capillary constants derived from deformation of the surface.

An Application of the Radiometer to the  
Measurement of Electric Current

T. D. Cope

J. Frank. Inst., June, 1919, p. 737

A form of the radiometer is described and illustrated, by means of which electric currents of from 0 to 20 milliamperes may be measured. Characteristic curves showing the performance of the instrument are given.

Photo-Electric Spectrophotometry by the  
Null Method

K. S. Gibson

J. Opt. Soc. Amer., Jan.-Mar., 1919, p. 23

On account of the blue sensitivity of the potassium photo-electric cell, it is well adapted to spectrophotometry in this region of the spectrum. The complete set-up of apparatus is diagramed. The null method is chosen on account of its simplicity.

The Absorption of Ultra-Violet and Infra-  
Red Radiation by Glasses

A. W. Smith and

C. Sheard

J. Opt. Soc. Amer., Jan.-Mar., 1919, p. 26

In this investigation a Fery quartz spectograph was used for the ultra-violet, and a Hilgar infra-red spectrometer for the infra-red. Reproductions of spectra and transmission curves are given for a large number of commercial colored glasses.

- An Approximate Law of Energy Distribution** D. L. Webster  
in the General X-Ray Spectrum  
Proc. Nat. Acad. Sci., May, 1919, p. 163

The problem of the present paper is to combine other available data in such a way as to find an approximate law of energy distribution. The data are incomplete and this work is merely a first approximation.

- Physical Tests of Balloon Fabrics** E. D. Walen  
Chem. Abst., 1919, p. 1394

Third annual report, National Advisory Committee for Aeronautics, 1917.

- A Complete Apparatus for Absolute** A. G. Webster  
Acoustical Measurements  
Proc. Nat. Acad. Sci., May, 1919, p. 173

A description of a portable instrument for measuring the intensity of sound at any given point of space in terms of absolute units.

- Hydrogen Overvoltage** D. A. MacInnes and L. Adler  
Proc. Nat. Acad. Sci., May, 1919, p. 173

Hydrogen overvoltage may be defined as the difference of potential that exists between a reversible hydrogen electrode, and an electrode, in the same solution, at which hydrogen,  $H_2$ , is being formed from hydrogen ions. From the work done so far, it appears quite probable that the factor that determines the overvoltage of an electrode at any one pressure is the size of the gaseous nuclei that can cling to it.

- On the Arc Spectrum of Scandium** W. Crookes  
Proc. Roy. Soc., June 4, 1919, p. 438

In order to get a conducting specimen, the substance was powdered, mixed with finely divided silver and pressed into rods. Comparison spectra of iron and of pure silver were also impressed upon the plates. Wave-lengths are tabulated from 2420 to 6305 A. U.

- Instrument for Recording Intensity** (F. A. Swan) See 1.  
of Daylight

- Ultra-Violet Light in the** (C. Ellis and A. A. Wells) See 1.  
Chemical Arts. XXII.

- The Exact Determination of Surface** (F. M. Jaeger) See 3A.  
Tension, Specific Gravity and Electrical Conductivity  
of Liquids at Very High Temperatures

### 3. Chemistry

#### (A) General and Inorganic Chemistry

##### How the Nitrogen Problem Has Been Solved

H. J. M. Creighton

J. Frank. Inst., June, 1919, p. 705

A continuation of paper on this subject in the previous number of the journal. This section of the paper deals with the oxidation of ammonia, consideration being given to the theoretical as well as to the practical phases of the subject. Various types of apparatus in use are described and illustrated. Tables showing the comparative cost of production of combined nitrogen by various processes and the total production of combined nitrogen in the United States and in the world for the years 1914, 1918 and 1919 are given. A very complete and extensive bibliography of the literature of the subject is appended.

##### The Concentration of Nitric Acid

M. Kaltenbach

Chimie et Industrie, Feb., 1919, p. 142

Discussion of the practical applications of M. Pascal's study of the theoretical conditions. Equilibrium data for the preliminary phase of *preconcentration* of weak acid to 68% by heat and of the further operation of *dehydration* (or *denitration*) to 88 %—90 % are dealt with, and suitable installations described and illustrated; the dimensions of the denitration tower were calculated from the theoretical thermal balance-sheet, which was exactly verified in practice.

##### Neutral and Acid Sulfates of Sodium

P. Pascal and Ero

Bull. soc. chim., 1919, 25, p. 85

Analysis of the ternary system, sodium sulfate-sulfuric acid-water, on phase rule principles. Tables are given of composition of liquid and solid phases from  $-30^{\circ}\text{C}$ . to  $120^{\circ}\text{C}$ . and the array of isothermals plotted on the triangular diagram. From the results obtained, the following criticism of patents for recovery of acid from niter cake is drawn; two methods of operation are possible—(1) recuperation of all the acid by deposition of the neutral decahydrate by energetic cooling from relatively dilute solutions, or (2) consenting to lose part of the acidity by operating from concentrated solution, allowing the intermediate bisulfate to separate, without recourse to expensive refrigeration. Specific details and discussion of thermal balance are given; also fusion curves of industrial bisulfate (niter cake).

##### Temperature Coefficients of Catalyzed Reactions

N. R. Dahr

Ann. chim., 1919, p. 130

The results of this long and interesting paper are as follows:—(1) It is found that reactions positively catalyzed have a lower temperature coefficient than the uncatalyzed reactions, those negatively catalyzed a higher temperature coefficient. This was proven for the reduction of chromic acid by various substances, for the oxidation of sodium formate by iodine, etc. (2) Light, as a catalyst, acts in the same way. The results are regarded as being in agreement with Arrhenius' views of the increase in number of active molecules by temperature rise.

**The Exact Determination of Surface Tension,  
Specific Gravity and Electrical Conductivity  
of Liquids at Very High Temperatures**

F. M. Jaeger

Rev. gén. sci., Jan., 1919, p. 5

Review of past ten years' work in the inorganic chemical laboratory of the University of Groningen (Holland). Surface tension was measured at temperatures from  $-80^{\circ}$  to  $1650^{\circ}$  C. by determining the pressure of nitrogen necessary to form a bubble at the end of a tube immersed in the liquid. A very sensitive manometer is described. Conductivities were measured by the Kohlrausch method. A high frequency generator was used and a Leeds and Northrup slide wire and coils. Determinations were made of potassium, sodium, lithium, rubidium and cesium nitrates between  $310^{\circ}$  and  $560^{\circ}$  C., of potassium fluoride, chloride, bromide and iodide from  $690^{\circ}$  to  $975^{\circ}$  C. and of sodium tungstate and molybdate from  $710^{\circ}$  to  $1565^{\circ}$  C. Molecular conductivity at these temperatures is still a linear function of the temperature of the form  $\mu = A + B(t-t_0)$ .

**Electro-Plating on Iron from Copper Sulfate Solution**

O. P. Watts

Brass World, April, 1919, p. 108

By immersing iron in an acidified (HCl) solution of arsenious oxide an adherent copper plate may be subsequently deposited from an acid electrolyte. Certain solutions of lead (fluosilicate) and antimony (chloride) may be substituted for the arsenic dip, previous to direct-current plating of copper on iron from copper sulfate.

A somewhat complex alloy was recently patented by C. R. Denton, which, it is claimed, can be easily rolled, hammered, cast, stamped and brazed. It retains its ductility and does not corrode or tarnish under ordinary atmospheric conditions. It resists most acids and sea-water. Its composition approximates: copper 86 parts, nickel 15 parts, vanadium 1 part, spelter 12 parts, tin 7 parts, aluminium 1 part.

Brass World, April, 1919, p. 102

**Relation between Electrical Conductivity  
and the Periodic System of the Elements**

E. Grüneisen

Ber. physik., 1918, p. 53

The atomic conductance at corresponding temperatures is a periodic function of the atomic weight, of the type that it diminishes from a maximum value in the 1st group of the periodic system to a minimum value in the zero and 8th groups.

**Zeppelin Aluminium**

Brass World, April, 1919, p. 121

A piece of aluminium alloy from a smashed Zeppelin has the following composition: Al 91.92%, Cu 4.13%, Fe 3.27%, Si 0.65%. The tensile strength of this alloy is estimated 40,000 pounds to the square inch.

**Zirconia. Its Use as a Refractory, an Opacifier  
and an Abrasive**

A. Granger

Chem. Abst., 1919, p. 1003

- The Action of Tin towards Distilled Water and Aqueous Medicinal Solutions A. Jermstad and A. Gaule  
Chem. Abst., 1919, p. 1370

No action was observed except under conditions of both attrition and high temperature, when colloidal dissolution of the metal occurred.

- Hydrogen Overvoltage (D. A. MacInnes and L. Adler). See 2.

## (B) Analytical Chemistry

- New and Rapid Apparatus for Electrochemical Analysis J. T. King  
Chem. Met. Eng., July, 1919, p. 25

An apparatus of new design, exhibiting a new method of agitating the electrolyte (stirring by rotating the containing beaker) is described, together with preliminary apparatus leading to the adoption of the apparatus in its final form.

- Limits of Separation by Fractional Distillation. S. F. Dufton  
A New Stillhead  
J. Soc. Chem. Ind., 1919, p. 45 T.

- Stable Silver Nitrate Solution F. Liebert  
Chem. Weekblad, 1919, p. 74

Exposed to light until all organic matter has reacted, then filtered through asbestos. Such a solution will keep in full daylight more than a year.

- Utilization of Waste Paper in Filtration S. L. Jodidi and H. G. Higgins  
Chem. Eng., 1919, p. 45

Account of results obtained at the Bureau of Plant Industry, United States Department of Agriculture, giving description of extraction treatments necessary, preparation of filter pulps and cakes, and results in gravimetric analysis of different preparations compared with S. and S. filter paper No. 588.

- Antimony Analysis—Bibliography, Part 2. E. R. Darling  
Chem. Eng., 1919, p. 41

- Specifications for and Methods of Testing Soaps  
J. Frank. Inst., June, 1919, p. 745

An abstract of a Bulletin of Standards circular dealing with this subject, in which are outlined methods for sampling and testing for the various constituents.

- Instruments for Showing the Presence and Amount of Combustible Gas in Air (E. R. Weaver and E. E. Weibel). See 2.

**(C) Colloid Chemistry****Studies on Plant Colloids. VI.—Alkali Starches****M. Samec****Kolloidchemische Beihefte, 1916, 8, p. 33**

Four processes appear in action of alkali on starches; two are reactions with the phosphoric acid of the starch complex, one, in stronger alkalies, combination with the starch aggregate, finally, a peptization of the complex.

**Forms assumed by Drops and Vortices of a Gelatinizing Liquid in Various Coagulating Solutions****E. Hatschek****Proc. Roy. Soc., Feb., 1919, p. 303**

Gelatine forms when dropped into aluminium sulfate, gum arabic and copper sulfate solutions were studied.

**Color and Dispersion of Particles in Colored Solutions****W. Harrison****Sci. Abst. Physics, 1919, p. 215,****from J. Soc. Dyers Colorists, Jan., 1917, p. 7**

Solutions of night blue, Victoria blue and other coloring matters were investigated.

**On the Occurrence of Mists in Chemical Reactions****V. Rothmund****Monatshefte für Chemie, 1918, p. 571**

Historical and critical; ozone mists due to water condensation on volatile reaction products.

**Coagulation of Metal Sulfide****J. N. Mukherjee and N. N. Sen**

**Hydrosols. I.—Influence of Distance between the Particles of a Sol on its Stability. Anomalous Protective Action of Dissolved Hydrogen Sulfide**

**J. Chem. Soc., 1919, p. 461**

The influence of dilution is studied on arsenious sulfide sols with solutions of hydrogen, ammonium, potassium, lithium, barium and aluminium chloride, aluminium sulfate and thorium nitrate. On mercuric and cupric sulfides, solutions of potassium, ammonium and barium chlorides, aluminium sulfate and thorium nitrate were used.

**Properties and Uses (in Dyeing, etc.) of some Titanium Compounds****J. Barnes****J. Soc. Dyers Colorists, 1919, p. 59**

Such titanium salts as by hydrolysis or by oxidation followed by hydrolysis deposit titanium dioxide directly in hide or cotton fiber can be used as mordants for acid dyes. The most important commercial titanium salt is the double sodium and basic titanate sulfate.

Contributions to the Knowledge of Thickening  
Agents for Printing Colors

R. Haller

Kolloidchemische Beihefte, 1916, 8, p. 1

Influence of colloid chemical conditions on textile printing.

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**(D) Organic Chemistry**

Paper Research Literature

E. L. Matthews

Paper, April 30, 1919, p. 15

A list of contributions by members of the Forest Products Laboratory of the United States Forest Service, 1910-1918; with an appendix of contributions by other members of the service, 1877-1918.

Paper Research Literature

E. M. Smith

Paper, May 7, 1919, p. 15

A list is given of contributions by the members of the Forest Products Laboratories of Canada, 1913-1918.

Paper Research Literature

E. O. Reed

Paper, June 4, 1919, p. 15

A bibliography is given containing the contributions by members of the United States Bureau of Chemistry, 1904-1918.

The Chemistry of Woodpulp Production

A. Klein

Paper, May 14, 1919, p. 15

A résumé is given of some of the important theories of the structure of cellulose and some of its more important reactions. It is well worth reading.

Curious Dendritic Growths in Paper

J. Strachan

Paper, May 21, 1919, p. 40

Chemical reactions producing these growths are complex. A particle of bronze is attacked by chemical residues chief among which is aluminium sulfate, with the formation of soluble copper sulfate. This creeps along the fibers and is reduced to insoluble black copper sulfide. Alternate oxidation and reduction of this causes the insoluble copper compounds to be deposited along the fibers. This is of more than passing interest since the chemistry (secondary reactions) of these growths may indicate the nature of chemical action taking place in the deterioration of paper during ageing, in which the cellulose is attacked by chemical residues from various sources.

## From Eastman Kodak Research Laboratory

### Photographing Luminous Clock Dials

032

Report No. 689

Luminous clock dials were photographed by placing the dial in the front frame of an ordinary copying camera. A circular opening fitting the dial closely was cut in the center of a piece of heavy pasteboard, the dial fastened in and the board placed in the kit regularly used for holding the negative when making lantern slides.

A 7" lens was used in the central compartment of the camera and the exposure made on a Seed 30 plate. As the light from the dial is too weak to make the image readily visible on the focusing screen, a glass plate with lines on which to focus was first placed in the kit, the image focused, the glass plate removed, and the board holding the dial inserted.

In mounting the dial in the board care must be taken that the face of the dial shall come in the same plane as the plate used for focusing. After inserting the dial a black cloth was placed over the front of the camera to exclude all light from without. The holder containing the plate was placed in position, the slide drawn and a black cloth placed over the back of the camera.

These precautions are advisable as the exposure required with a fast plate and open lens was seventy-two hours.

The plate was developed in strong contrast developer and prints made direct, no intensification or retouching being necessary.

### Reproducing Blue-Prints

057

Report No. 686

A number of methods were tried for reproducing a blue-print on developing-out paper. Such a print can be reproduced either by printing through an appropriate filter such as the G filter onto a hard working paper or by toning the print to change its color and then printing direct onto a contrasty paper. The most satisfactory results were obtained by printing with the G filter onto Insurance Bromide paper, for which, if the longer exposure does not matter, Azo Hard X may be substituted. The print may be toned either with tannin or by conversion of the image into iron sulfide which on treatment with silver nitrate then gives silver sulfide.

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## Books

### Recent Accessions to the Library:

Illumination and Photometry

W. E. Wickenden

McGraw-Hill Book Co., New York

Emphasis is placed on the scientific basis of the subject and methods of rational analysis rather than the description of processes of manufacture, structural details and prevailing practice. The following subjects are a few of those considered: the principles of vision; photometric devices and their manipulation; portable photometers; integrating photometers; calculation and representation of illumination.

**Catalysis in Industrial Chemistry**

G. G. Henderson

Longmans, Green &amp; Co., London

It is a book intended for the industrial worker and shows the rapid development of applied science along the lines of catalysis. Both the organic and the inorganic chemist will enjoy reading it.

**Crystallization of Albumins ("Krystallisation von Eiweissstoffen")**

F. N. Shulz

G. Fisher, Jena

Useful compendium on the subject prior to the work of Sorensen.

**Volumetric Analysis ("Lehrbuch der chemisch-analytischen Titriermethode")**

F. Mohr

F. Vieweg &amp; Son, Braunschweig (1874)

This is the 4th edition of a work of fundamental importance for volumetric analysis.

**Analysis of Fats and Wax Varieties (Analyse der Fette und Wachsarten")**

R. Benedikt

J. Springer, Berlin (1886)

**The Chemistry of Drying Oils ("Die Chemie der austrocknenden Oele")**

G. J. Mulder

J. Springer, Berlin (1867)

German translation of the classical work of the celebrated Dutch chemist, who first pointed out the importance of unsaturation for drying oils, and showed "drying" to be an oxidation process.

**The Polariscope in the Chemical Laboratory**

G. W. Rolfe

Macmillan Co., New York

**Description of the Laboratories of the Mines**

Branch of the Department of Mines, Ottawa

Government Printing Bureau, Ottawa

**Tables of Properties of Inorganic Substances**

G. Segerblom

Exeter Book Publishing Co., Exeter, N. H.

Properties of some 1500 substances are systematically tabulated in this useful companion to systematic qualitative analysis.

**Atom Mechanics. Vol. I.—True Atomic Weights of the Chemical Elements and the Unity of Matter**

G. D. Hinrichs

C. G. Hinrichs, St. Louis, Mo., (1894)

The main contention that the true atomic weight is the limit for the case when very small quantities react, and *not* the average or mean, corrected by probable error

determinations, deserves attention, and the series-limit method should be considered by every analytical chemist. This little-known author's critique of modern idols of the chemical theater is worth reading.

Twenty-Two Copper Plates Accompanying the Hermann Kopp  
"Introduction to Crystallography" ("XXII  
Kupfertafeln zu der Einleitung in die Krystallographie")  
F. Vieweg & Son, Braunschweig (1862)

This book is an atlas of finely reproduced crystal forms of every system and class, containing also as appendix seven plates of crystal model skeletons ("Netzen"). For crystallographic study, however, the figures are not so valuable as those in the modern treatise of Tutton ("Crystallography and Practical Crystal Measurement", 1911).

## Patent Abstracts

### U. S. Patents

1304466 H. R. Evans, Deceased. A. K. Evans, Executrix K31

A Motion Picture Apparatus intended for the projection of or taking simultaneously of two images. Two lens systems are movable together for focusing purposes and behind them are placed reflecting prisms which throw the images closely together on the film.

1304517 F. Twyman and H. Workman K3117

An Optical Appliance for Two-Color Work. The light is split by means of a reflecting and transmitting prism into two parallel paths, each equipped with a lens system.

1305692 J. I. Crabtree. Assigned to E. K. Co. J88

A Method of Making a Colored Image which consists in first copper toning the silver image and then mordanting a dye upon this copper image.

1304678 W. F. Folmer. Assigned to E. K. Co. 083—219

A Camera designed particularly for use in airplane work. It is portable and not attached to the machine. It is equipped with roll film and focal plane shutter, both of which are set for another exposure by the movement of an operating handle. A capping shutter is placed in front of the lens. It is provided with a hand hold and pistol grip and sights so that it may be handled similarly to a gun. The operation of the trigger opens the capping shutter and also trips the curtain shutter.

1301873 N. Pedersen. Assigned to A. Brock, Jr. 083—219

A Mounting for a Camera upon an Airplane in which provision is made for permitting the camera to adjust itself to compensate for pitching or rolling of the air craft. A speed-controlling mechanism for the motor, which is controlled by the operator, is connected by a flexible connection with the camera.

1305841

L. H. Tolhurst 083—219

A Camera adapted particularly for aviation work in which the frequency of exposures is determined automatically by barometric means so that when the aviator is flying high and the camera is recording large areas at each exposure they will be made less frequently. Opposite each exposure is recorded images of the clock, barometer and compass readings.

1305393

A. E. Michaelson 089

Photographic Means for Registering Speed of Rotation. A film is drawn at a constant rate past a small exposure opening, beneath which there rotates a drum having a lamp within it and an exposure opening at one point. This drum is connected for rotation with the part, the speed of which is to be measured. The distance between the impressions made on the moving film indicates the speed.

1302011

J. A. Christiansen 1516

Method of Producing Methyl Alcohol from Alkyl Formates. A vapor of methyl formate is passed together with hydrogen over a catalyst such as reduced copper at a temperature of about 180°. Methyl formate may suitably be produced by a known process treating sodium methoxide with carbon monoxide under high pressure.

1297685

R. N. Harger 15314

Process of Manufacturing N-Methyl p-Amino-Phenol consisting in heating hydroquinone with a solution of methylamine in an autoclave at a temperature between 150° and 200° for five hours.

1305195

S. Cocanari 1685

Anti-Halation Coating for Photographic Products consisting of an indelible violet colored material which may be incorporated in the film base or as a coating to the support. It is transparent to actinic rays and also to non-actinic or red light, so that the progress of development may be noted. It does not affect the printing time of a negative.

1305097

J. P. Hansen 214

A Camera Particularly Designed for Use with Films Supplied in Individual Envelopes. It has shoulders against which the edges of the envelopes abut.

1303918

R. Kroedel. Assigned to E. K. Co. 215

A Roll Film Camera in which the take-up roll is mounted between spring supports. One end of the roll is engaged by the key, which is held in engagement therewith. The key also serves to hold the parts of the camera casing together at one end of the spool chamber, while it forces the spring support at the other end of the chamber into engagement with a socket on the camera back, locking the parts together there.

1306580

W. G. Cramer 215

A Box Type Camera Having a Removable Frame on which is supported the spools and film. A T-shaped spring engages the axles of the spools to hold them in proper position.

1304093

J. E. Potts 2151

A Camera Intended for Use with a Roll Film in which alternate spaces are left open for focusing. A pivoted plate on the back permits inspection of the focusing screen. This plate may have a mirror upon its inner surface to reflect the image for the convenience of the user.

1304325

A. F. Kellogg 2153

A Camera Equipped with Means for Making Light Inscriptions upon a sensitized surface. On the outside of the camera is provided a frame or holder which may be guided by a stylus or pencil. The user operates the stylus as if writing on the outside of the camera and this operates a light-point within the camera to make a light record on the sensitized surface. This light recording means consists of a tube, one end of which may be opened to the outside light and having a small opening which may be moved to make the inscription.

1304361

A. J. Oehring 2153

A Camera Having Attachment for Making Light-Printed Legends upon the exposure area. It consists of a removable slate-like plate, upon which inscriptions may be written outside of the camera. This is then thrust through a slit in the side of the camera in front of the exposure area and at the time of the exposure the inscription is light-printed.

1305585

H. L. Boyer 2153

A Camera Equipped with Light-Printing Titling Means. A number of forms are described. In each case a flexible curtain introduces a mask in front of a portion of the exposure area, leaving an unexposed part. By a later operation an inscription slot is introduced in front of this part and the legend light-printed on the film.

1304796

W. E. Mowrey 241

A Photographic Printing Machine comprising an attachment for use with an ordinary window frame. Light is admitted to a printing box from the lower part of the window, the rest of the window being covered with opaque material except for adjustable openings having colored screens through which light may enter.

1305043

R. F. Whitt 2541

A Film Developing Tank in which a number of parallel foraminous frames are placed upright and a long strip of film may be passed around them. The same device may be used for individual films by placing a frame, by which the films are supported by clips, over the first mentioned frames.

1304032

P. E. Edelman 2542

A Daylight Film Tank for use with individual films of a film pack. The films are drawn one at a time from the film pack, each into its own tank, where they coil loosely and are readily developed.

1305095 J. P. Hansen 2542

A Developing Tank for daylight development of films furnished in individual envelopes, the envelopes being used in the camera and removed with the film still in them.

1301750 C. F. Saunders 258

A Blue Print Drier in which the prints to be treated are carried through an oven upon an apron.

1306057 L. I. Gates 2614

A Tripod with a weighted head and spherical socket member by which a camera normally assumes a horizontal position.

1304585 J. L. McFarland 2626

An Automatic Actuating Device for Cable Release. A spring-operated plunger and a dash pot are the actuating and timing means, the time being regulated by adjusting the air exit from the dash pot.

1301897 J. Becker. Assigned to E. K. Co. 2645

A Camera Equipped with Optical Focusers with three separate adjustments to permit of regulating and setting a given focuser for co-operation with any one of different lenses. The patent discloses a large number of arrangements for accomplishing the desired purpose.

1305096 P. J. Hansen 2658

An Envelope for Individual Films provided with a removable slide so that it may be used in the camera and then removed therefrom in daylight.

1303836 A. Wyckoff and 0648  
M. Handschiegl

Assigned to Famous Players-Lasky Corp.

A Method of Coloring Motion Picture Films. It consists in making opaque a positive print upon those portions which it is desired to color and taking a negative print therefrom. The negative print is waterproofed on the portions corresponding to the parts not rendered opaque and is then treated with coloring matter. This coloring matter is then transferred to the positive print by contact, the prints being registered.

1304010 L. J. Bechtold 066

An Indicating Device for use in motion picture theaters to show at what stage the exhibition is. The speed of it may be varied at different times of the day if the rate of exhibition changes.

1302367 E. S. Hopkins, Jr. 069

A Phonographic Record for use in combined motion pictures and phonographs in which the phonic record is modified by omission or modification of parts thereof,

so that it will synchronize with the motion picture record. This is done usually by speeding up or retarding the original record at certain points in making a master record.

1805405 C. J. Peterson 3102

A Film Gate for Motion Picture Cameras in which the film-clamping members move toward and from the film in a substantially straight line movement.

1805633 C. Ubelmesser 3103

Assigned to Cru Patents Corporation

A Motion Picture Camera provided with shutters which can be adjusted so as to vary the duration of the exposure.

1301357 H. S. Beckman 313—366

A Motion Picture Camera normally driven by a spring motor equipped with a governor to insure uniform speed. There is also an electric motor, the two motors having a common driving mechanism with the camera crank shaft, so that either may be employed without removing the other.

1801358 H. S. Beckman 313—366

A Motion Picture Camera equipped with tandem spring motors with governors to insure a uniform speed. An electric motor is also provided which may rewind one spring motor while the other is in use, thus insuring a constant, continuous source of power.

1305002 F. E. Oiler. 3201

Assigned to J. E. Boeck and S. E. Dettelbach

An Intermittent Film-Feeding Means for Motion Picture Film. The means engaging the apertures of the film moves at right angles thereto both in engagement and disengagement, the purpose being to avoid the wear on the edges of the perforations through movement oblique thereto.

1304021 A. B. Carter 3204

A Metallic Film Reel is furnished with a removable metal band which springs over the flanged edges of the reel and can be locked to tightly close the reel. It is thus not necessary to provide a separate metal container for the reel when not in use or when being shipped.

1302803 C. F. Jenkins 3208

A Film Box in which the receiving and supply rolls of motion picture film are placed. If the takeup roll should slow down or cease to rotate, it causes the application of a brake to the supply roll to prevent over-feeding.

1305804 C. F. Jenkins 3209

A Film Chamber for Motion Picture Machines carrying both reels of film and having a safety entrance. The film passes in both directions between rollers which will extinguish any fire that might catch the film.

1303047

C. W. Ebeling 323—069

A Synchronizing Means for the motors which drive synchronously motion picture projectors and sound-reproducing mechanism.

1305154

J. G. R. O'Hara. 325

Assigned to Educational Motion Picture Machine  
and Film Co.

Motion Picture Projection Apparatus designed particularly for compactness and portability. The reels and their supporting brackets are readily demountable. The lantern and projecting machine are easily detachable from the tripod and are retained in proper relation at all times so that adjustment of them except for focusing is unnecessary when the machine is assembled. There is provision for rewinding the film on the machine.

1302249

O. Voetzer. Assigned to Duplex Machine Co. 33

A Punch for Perforating Films in which the punch block is made up of a plurality of plates secured together instead of being an integral structure, as is stated to be the common practice.

1301849

R. W. Jones. 366

Assigned  $\frac{1}{4}$  to L. H. Howe and  $\frac{1}{4}$  to S. M. Walkinshaw

A Motor-Driven Apparatus for winding motion picture films. It is controlled by a pedal.

1303837

A. Wyckoff and M. Handschiegl. 383

Assigned to Famous Players-Lasky Corp.

An Apparatus for coloring motion picture films by the contact printing of one film by another. Provision is particularly made for accurate registry of the images.

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## British Patents

124931

A. W. Buck EX1214

Photography. A Container for Films for X-Ray Photography, more particularly for use in photographing the teeth, is made of material such that it may be bent and will retain the form into which it is bent. The container comprises a thin back-plate of a ductile metal having its edges bent over to enclose both a film and a front plate. The front plate consists of celluloid which is rendered opaque or transparent to red rays only.

125490

B. E. E. Wistowe X137

Photographic Paper. Sensitized Material for Use in Radio-Photography consists of paper coated with calcium tungstate emulsified in gelatine or the like upon which a sensitive coating is deposited.

## 125615 A. G. Pickard and F. Slinger 2152

**Cameras.** In a roll-film camera having mechanism for simultaneously setting a roller-blind shutter and drawing forward the film after exposure by one operation of a winding-lever, a lever is provided to prevent a backward movement of the winding-lever beyond the normal position at any time, and also forward movement of the winding-lever while the shutter is set; a drum which indicates the number of exposures made may also be provided.

## 125053 J. P. Hansen 241—255

**Dark-Room Lamps.** In a Dark-Room Lamp Adaptable for Photographic Printing, the lower part of the lamp casing is provided with a reflector and a glazed opening and is separated from the upper part containing the light source by a horizontal partition having a central opening covered with a sheet of white, ground or milk glass. Two slides, containing respectively red and yellow glass, are connected by arms to rotatable shafts, so that either may be brought above the opening in the partition. A colored glass pane may be slidably inserted below the milk glass. The slides may consist of clamps which spring round the short edges of the glasses and have holes for the resilient arms. In some cases, the arms engage with holes in the glasses. A single slide may be employed in place of the slides.

## 124962 G. Osborn 067

**Cinematograph, &c., Halls.** In order to minimize fires in cinematograph, &c., halls, the projecting apparatus is located in a separate fire-proof chamber, and the projected pictures are deflected onto the screen by a reflecting system. The screen can be viewed from the chamber by means of a periscope.

## 124879 M. E. W. Hollywood 069

**Synchronizing Music and Cinematographs.** A cinematograph and a musical accompaniment produced by a mechanical player, having a perforated roll, or an orchestra, are synchronized by controlling a signal lamp by the cinematograph and by placing marks upon the roll or score sheet in such a manner that the operator or conductor can determine whether the music is in synchronism with the picture or not.

## 125211 E. N. Holden 8209

**Cinematograph Apparatus.** Electro-magnetic means are provided which, should the film break, are operated to close the shutter of the slide carrier and to stop the machine simultaneously.



FA 6604.1

# Monthly ABSTRACT Bulletin



September, 1919

Issued by the Research Laboratory  
EASTMAN KODAK COMPANY  
Rochester, New York

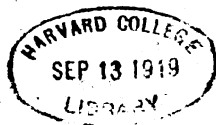


# Monthly **ABSTRACT** Bulletin



September, 1919

Issued by the Research Laboratory  
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Rochester, New York



*T. F. Currier,  
Richmond.*

# Monthly Abstract Bulletin

Vol. 5, No. 9

September, 1919

## Errata

In the *Abstract Bulletin* for July, 1919: on page 137, line 3, for "*Koll.-Zeits., 1918, p. 200,*" read "*Koll.-Zeits., 1918, 23, p. 200*".

In the *Abstract Bulletin* for August, 1919: on page 158, line 2, for *June, 1918*, read *June, 1919*; on page 165, line 4, for *other available data* read *all available data*; and on page 172, line 6, for *Shulz* read *Schulz*.

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## Addition to Numerical Classification

0639 Storage of Film.

## 1. Photography

- The Constitution of Organic Dyes and their Light-Sensitiveness Under the Influence of Anethol and Other Sensitizers P. R. Kögel 012—K/93  
Phot. Korr., 1918, p. 224

It was shown by a large number of experiments that the photochemical behavior of the dyes has proved to be a new criterion for the determination of their constitution.

- Effect of Grain Surface Lüppo-Cramer 014  
Koll.-Zeits., 1915, 17, p. 135

The unexpected observation that the development of a gelatino-bromide film with ammonia is not diminished but appreciably advanced by a pre-treatment with sodium nitrite is, according to the author's view, to be explained as follows: Especially fine grained plates were used for this experiment. With such plates the bromine absorption medium should no longer act exclusively on the outer grain surface but also give opportunity for absorption of the bromide diffusing out of the interior of the grains. By these strong bromine explosions the grain should become profoundly shattered and in consequence offer later a large surface of attack to the ammonia. The corresponding experiment with coarse-grained plates was not carried out.

- Determination of Color-Sensitiveness of Photographic Plates A. v. Hübl 016  
Phot. Korr., 1918, p. 40

The exposure is made through a neutral gray wedge and with red, yellow, green and blue filters.

- A New Method for Determining the Density of Curves of Light-Sensitive Films K. Schrott 016  
Phot. Korr., 1918, p. 294

A simplification of Goldberg's densograph. The author is of the opinion that a curve given in percentage is more suitable for practical purposes than a curve given in logarithms, and he describes an apparatus for obtaining these curves by a direct method.

- On Thiocarbamide Pseudo-Solarization Lüppo-Cramer 017  
Koll.-Zeits., 1915, 17, p. 137

The phenomenon characterized as pseudo-solarization by Liesegang is connected with the fact that for a certain degree of dispersion the covering power of a given amount of silver is greater than when the silver is coarse-grained. Brown areas thus appear darker than blackish ones. (This explanation was known long ago.—Abstractor.)

# Coloring of Silver Bromide with Prussian Blue

Lüppo-Cramer 018

Koll.-Zeits., 1915, 17, p. 139

Colloid silver is a marked optical sensitizer. Colloid ferric ferrocyanide on the contrary is not.

# Decennia Practica

K/53

B. J. Col. Sup., 1919, p. 27

Photography in colors by prismatic dispersion (continued).

# Collodio-Bromide Emulsions

Lüppo-Cramer C/64

Phot. Kor., 1918, p. 388

The preparation of washed collodio-bromide emulsions for ferrotype is described. The preservatives recommended are gelatin and glycerine.

# The Use of Boric Acid in the Developer

G1—163

Phot. Kor., 1918, p. 256

A blue-black tone can be obtained on gas-light papers by means of a developer which contains metol and hydroquinone and much borax and sulfite.

# Metol-Adurol Developer

G1—163

Phot. Kor., 1918, p. 386

The following formula is recommended by Hauff:—

Water.....	1 liter
Metol .....	8 grammes
Adurol .....	50 "
Sodium sulfite (cryst.).....	300 "
Potassium carbonate .....	250 "
Potassium bromide.....	1-2 "

For rapid development (2-3 minutes) this developer is to be diluted with 5 parts, and for slow development with 10-15 parts, of water.

# Economy in Fixing

G6

B. J., 1919, p. 405

An editorial note points out that a great deal of the hypo is transferred from the fixing bath to the washing tray along with the prints, a transference which a little care would avoid. The hypo so transferred is often replaced either with rinsing water or with developer in the passage of the prints into the fixing bath. Greater care in handling would therefore effect a considerable economy of hypo.

# Reversal in Development

G8

B. J., 1919, p. 419

Ilford, Ltd., ascribe the reversals, which have been referred to in the correspondence columns of the journal as occurring in the development of negatives, to the contamination of the developer with small amounts of hypo or other solvent of silver bromide.

Reduction of Photographic Plates with Ferric Ammonium Sulfate H. Krauss H1—1656

Chem. Abst., 1919, p. 1565, from Zeits. wiss. Phot., 1919, 18, p. 192

A bath containing 20 grammes of this salt and 5 grammes of sulfuric acid per liter is a proportional reducer; sufficient reduction is usually effected in from 2 to 4 minutes.

Intensifying and Dyeing of Pigment Prints on Glass and Other Supports H. Kessler H2

Phot. Korr., 1918, p. 321

The gelatin is treated with a 1% ferric chloride solution and then with a 1½% gallic acid solution.

Flattening Post Cards or Prints M. C. Millburn J6  
B. J., 1919, p. 435

Correspondent describes the method which he uses for flattening prints after drying.

Toning Enlargements C. E. T. J83  
Amat. Phot., July, 1919, p. 3

Warm tones on bromide paper by chloridizing the image and redeveloping with restrained developer.

Toning with Selenium and Tellurium Compounds K. Kieser J84  
Phot. Korr., 1918, p. 9

This is an excellent review and discussion of the known methods of toning by means of compounds of selenium and tellurium, with complete references to the German patents on this subject.

The Collection of Silver, Gold and Platinum Residues from Photographic Solutions F. Novak P  
Phot. Korr., 1918, p. 244

A review of various methods is given.

On the Photographic and Photodynamic Action of a Furodiazole P. R. Kögel X  
Phot. Korr., 1918, p. 358

The therapeutic importance of a furodiazole in the body during exposure to X-rays is discussed.

Practicus in the Studio—Apparatus Repairs and Renovations 03—211

B. J., 1919, p. 408

Suggestions for work which can be done by the photographer himself.

- Practicus in the Studio—Posing the Head 0314  
B. J., 1919, p. 423

Deals with the peculiarities of faces in portraiture and with the poses which must be used to secure the best results.

- Local Views as Post Cards C. B. Barnes 032  
B. J., 1919, p. 395

Suggestions for the improvement of commercial post cards in view of the increased price which is now being charged for them in Great Britain.

- Some Items in the Use of the Vest Pocket Camera 032—215  
B. J., 1919, p. 390

General discussion of the vest pocket camera from the point of view of the commercial photographer. It is pointed out that the advantages of the small camera are its depth of focus with a large aperture together with ease of manipulation. A warning is given against getting too close to the subject, since this is likely to result in unsatisfactory perspective.

- The Prevention of Halation During Development R. Spillar 041—G  
Phot. Korr., 1919, p. 387

Halation can be prevented by very full exposure and the use of a cool developer, so that the image is only superficially developed. Developing formulae are given.

- Harmful Action of Sulfurous Acid in the Dark-Room Lüppo-Cramer 041  
Phot. Korr., 1918, p. 252, from Phot. Ind., 1916, No. 50

Vapors of sulfurous acid, escaping from acid fixing baths, may cause fogging of dry-plates.

- Stereoscopic Photography. IV.—“Giant Vision” C. E. B. 043  
B. J., 1919, p. 378

This deals with stereoscopic work from widely separated points such as is used in mountain photography, in airplane work and above all in astronomy.

- Stereoscopic Photography. V.—Some Scientific Applications C. E. B. 043  
B. J., 1919, p. 406

Deals especially with hand-drawn diagrams of stereoscopic models.

- Something about Telephotography R. Zima 052  
Phot. Korr., 1918, p. 8

Photography with telephoto lenses is recommended and a description of their use is given.

- The Treatment of Gelatino-Bromide Plates and Papers in Summer R. Namias 055

Il Progresso Fotografico, 1919, p. 140

The author recommends the addition to the developing bath of tannic acid, which he finds satisfactory for hardening film.

- Progress in the Field of Chemical and Technical Photography R. Namias 083

Il Progresso Fotografico, 1919, p. 125

Description of recent progress in photography in Italy, containing especially an account of the way in which photography was applied in the war and in which the difficulties occasioned by the stoppage of imports was overcome.

- The Photographic Correction of Negatives Taken Obliquely L. P. Clerc 084

B. J., 1919, pp. 396, 411, 428

A mathematical article intended to discover the conditions necessary for the projection of the image of a sharp negative taken obliquely to the axis of the correcting lens and for the removal to infinity of the horizon line of the negative. This new image is then compared with that which would have been obtained by photographing directly from the same view-point on a horizontal plate.

- Photoplanography J. Rieder 089

Phot. Korr., 1918, p. 52

A piece of glass is put into a printing frame and protected against light, only one side being left free. A photographic plate is in contact with the glass. If light is passed through the glass all its scratches and impurities appear after development on the photographic plate. Illustrations of crystalline spherulites, obtained by evaporating solutions on glass plates, are given.

- A Focusing Screen for Photomicrography G. Ardaseer 094—2106

B. J., 1919, p. 363

The author makes focusing screens by the development of a slight veil on a dry plate, protecting a ring and circle in the center in order to leave a clear space for the focusing magnifier.

- Photography of the Retina G. Guist 097

Phot. Korr., 1918, p. 285

Description of the apparatus of Dimmer and the improvements of Carl Zeiss.

- Collodio-Bromide Lüppo-Cramer /64

Zeits. angew. Chem., 1916, p. R. 212, from Koll.-Zeits., 1915, 18, p. 18

It is generally considered that silver bromide which has been prepared in collodion with an excess of bromide is scarcely susceptible of optical sensitization. This

does not agree with the facts, however. In reality the effect of somewhat protracted action of bromide is to depress the general light-sensitiveness, notwithstanding the increase in grain-size which occurs.

### Practicus in the Studio—Plates and Their Work

11—0814

B. J., 1919, p. 391

General discussion on the various grades of plates used in studio work. The author recommends that a plate of not too high speed be adopted for ordinary work, reserving the fastest plates for exceptionally difficult subjects.

### Platinum and Platinum Paper for Photography

A. J. Jarman 1311

Phot. J. Amer., 1919, p. 349

Gives theory of platinum process and detailed instructions for preparing the sensitive paper.

### Palladium Paper

R. Jacoby 1314

Phot. Korr., 1918, p. 279

Good results can be obtained with the following formula:—

- |   |            |
|---|------------|
| I. Normal ferric oxalate solution, according to v. Hübl | 100 cc.    |
| Lead Oxalate  | 0.8 gramme |
| Monobasic ammonium phosphate                            | 2.5 "      |
| II. Potassium chloropalladite solution                  | 10%        |
| III. Sodium chloroplatinate solution                    | 10%        |

For a 50 x 65 cm. sheet mix:

Solution I.	8 cc.
" II.	7 cc.
" III.	10-15 drops

### Metol-Hydroquinone Developer without Alkali

R. Spillar 163

Phot. Korr., 1918, p. 35, from Phot. Rund., 1917, p. 246

Such a developer is recommended for the development of over-exposed plates, and in the photography of subjects having very strong contrasts. Good results were obtained with Lumière's solution:—

Water	600 cc.
Metol	1.5 grammes
Hydroquinone	0.7 "
Sodium sulfite (cryst.)	30 "

If the negatives are too thin, develop further in the following solution:—

Water	300 cc.
Metol	3.5 grammes
Hydroquinone	1.5 "
Sodium sulfite (cryst.)	40 "

- Toning and Fixing Bath without Gold** E. Valenta 1665  
 Phot. Korr., 1918, p. 242

P. O. P. prints which are durable if not exposed to moisture and sunlight can be obtained with the following combined bath:—

Water.....	1000 cc.
Hypo.....	200 grammes
Lead Chloride.....	20 “
Ammonium chloride.....	40 “

- Camera Movements. III** D. Charles 2105  
 B. J., 1919, p. 364

This section deals mainly with the use of the swing back as an aid to focusing with large apertures.

- Practicus in the Studio—Hand Cameras for Professionals** 213  
 B. J., 1919, p. 368

This gives hints on various types of hand cameras and their applicability to otherwise difficult subjects.

- The Laterna Magica of Eschinardi:** F. P. Liesegang 221  
 Discussions on Projection 250 Years Ago  
 Phot. Korr., 1918, p. 349

New historical data are given.

- The Position of the Lamps in Enlarging** P. Thieme 222  
**Apparatus for Diffused Light**  
 Phot. Korr., 1918, p. 311, from Phot. Rund., 1917, p. 211

The most favorable conditions are discussed.

- Practicus in the Studio—The Dark-Room and Its Fittings** 25  
 B. J., 1919, p. 382

Gives the lay-out and fittings of a typical dark-room of small dimensions.

- Improved Aprons of Photographic Film-** N. L. Scott 258  
**Drying Reels**  
 Optician, April 25, 1919, p. 133

- The Iris Diaphragm** F. Treitschke 2629  
 Phot. Korr., 1918, p. 50

Description of new iris diaphragm for reflex cameras whereby it is possible to focus with the largest aperture and expose with any aperture.

- Light-Filters for Cutting Out Ultra-Violet** P. R. Kögel 2663  
**Radiation**  
 Phot. Korr., 1918, p. 35

Filters of anthracene or triphenylmethane are recommended.

- A Simple Photometer** C. H. Sharp 2682  
 Phot. Korr., 1918, p. 313

A simple apparatus is described with which under correct conditions an exactitude of  $\pm 5\%$  can be obtained.

- The Gray Wedge Photometer as Applied to Botanical Problems** W. Kecht 2682  
 Phot. Korr., 1918, p. 379

A method of continuously recording light intensity.

0639

In a letter to the "Times", Mr. H. G. Ponting states that he considers that cine negatives properly treated with glycerine and hermetically sealed should last for at least a hundred years. He instances in support of his contention the Scott Antarctic films, which went twice through the tropics, once before development and afterwards on their return, in addition to experiencing low degrees of temperature. Mr. Ponting states that these films yield positives which for brilliance and quality are indistinguishable from those made on his return from the expedition.

B. J., 1919, p. 402

- The Rikau Etching Process** 0711/9  
 Phot. Korr., 1918, p. 339

A steel surface is treated with a Rikau solution (specially prepared from asphalt and caoutchouc) and exposed under a negative. A very weak solution of nitric acid in alcohol is then poured over the print. A distinct black image appears after a few seconds. The image is then powdered and etched.

- Photographic Printing on Wood** 07311  
 B. J., 1919, p. 372

A formula for printing photographs for wood engraving is reproduced from the Process Engraver's Monthly.

- A New Etching Machine** S. H. Horgan 07336  
 Inland Printer, July, 1919, p. 407

An account of the Century etching machine which drives the plate vertically in and out during etching.

- Ferric Chloride for Making Rapid Transfers from Tracings** W. Wall 074/9  
 B. J., 1919, p. 419

When exposed to light, ferric chloride softens hard gelatin. A correspondent gives his experience in using this process for the preparation of photo transfers.

- Engravers and Offset Work** J. A. Heppes  
 Printing Art, Aug., 1919, p. 457

A suggestion that photo-engravers should devote more attention to the preparation of negatives and plates for lithographers.

The Inventor of Steel Engraving H. L. Bullen  
Inland Printer, July, 1919, p. 403

An account of the life of Jacob Perkins.

Standardization of Color Process Inks W. J. Wilkinson  
Amer. Printer, July 20, 1919, p. 17

Suggesting a movement for standardization which has led to the formation of a committee to study the subject.

What Must be Done for the Graphic Arts in America J. Pennell  
Printing Art, Aug., 1919, p. 425

A strongly-worded article condemning the work now current in America and advocating a national trade and craft school.

Labor Saving at the Camera S. H. Horgan  
Inland Printer, Aug., 1919, p. 535

Advocating subdivision of work, one man to prepare the wet plate, another to pin up copy and expose and a third to develop and intensify.

Getting New Business J. Edwards  
Inland Printer, July, 1919, p. 430

Recommends photography of anything that can be used for advertizing. "Why not the use of the kodak in the securing of new business for the advertizing department?"

The Annual Convention of the American Photo-Engravers' Association  
Photo-Engravers' Bulletin, July, 1919

A full account of the proceedings of this meeting; contains reports of many papers of interest to engravers.

Twenty-Five Years of Process Work S. H. Horgan  
Inland Printer, July, 1919, p. 408

In a review of growth of process work the author says that the value of the output in the United States has reached \$35,000,000 annually. Progress has not been so much in quality as in means to meet demand for rapidity and for long runs.

Light-Sensitiveness of Isomeric Silver Salts of F. Kropf  
Organic Acids

Phot. Korr., 1918, p. 204

Deals with investigations into the direct photochemical decompositions of the silver salts of d-tartaric acid, l-tartaric acid, racemic acid and meso-tartaric acid in collodion as well as in gelatin emulsions. The silver salts of d- and l-tartaric acid and that of racemic acid are equally sensitive, while the silver salt of mesotartaric acid is much less sensitive. The silver salt of maleic acid is more sensitive than that

of fumaric acid. The silver salt of itaconic acid is more sensitive than that of citraconic acid, and the latter salt is more sensitive than that of mesaconic acid. The disposition of the carbonyl group gives more sensitive silver salts than the trans-position.

### Effect of Light on Eosin

C.

Chem. Eng., 1919, p. 141

This is an incidental observation of the formation, apparently under the action of light, of a brownish solid deposit in a thymolized aqueous solution of eosin.

### Ultra-Violet Light in the Chemical Arts. XXIII

C. Ellis and A. A. Wells

Chem. Eng., 1919, p. 73

Some further conclusions regarding the absorption spectra of some of the primary alcohols. Absorption spectra of confectionary colors and dyes.

### Ultra-Violet Light in the Chemical Arts. XXIV

C. Ellis and A. A. Wells

Chem. Eng., 1919, p. 102

A description of absorption spectra apparatus used.

### The Formation and Decomposition of Carbon Dioxide by Ultra-Violet Radiation

A. Coehn and G. Sieper

Zeits. physik. Chem., 1916, 91, p. 347

(1) A stationary condition ensues on illumination of carbon dioxide with ultra-violet radiation. (2) The wave-length of the decomposing rays is less than 2540 A.U. (3) The decomposition (into carbon monoxide and oxygen) increases with diminishing pressure more rapidly than agrees with the mass law—actually inversely as the pressure. (4) The reaction is extremely sensitive to traces of water, which acts as a negative catalyst to the decomposition.

At the Royal Photographic Society, there is a one-man exhibition of photographic portraits by N. E. Luboshez. All the prints shown are absolutely straight enlargements from straight negatives.

B. J., 1919, p. 370

### Daguerre's Diorama in Paris before the Invention of the Daguerreotype

J. M. Eder

Phot. Korr., 1918, p. 309

New data of historical value are given.

### The German Photographic Industry during the Year 1917 Phot. Korr., 1918, p. 306

F. Hansen

A description of the industrial situation.

### The Forms of Dispersion of Metallic Silver

(R. E. Liesegang) See 3C.

## 2. Physics

### Electric Metal-Spray Processes

M. U. Schoop

Sci. Abst.—Elec. Eng., 1919, p. 174

Spray is obtained by blowing air at 3.5 to 5.0 atmospheres across arc between electrodes one of which is carbon and the other the metal. A current of 30 volts and 30-40 amperes is used. Wires 0.8 mm. in diameter are fed at the rate of 2-3 meters per minute. Such sprays of aluminium on glass are very finely divided and cannot be removed without destroying the glass surface. Tungsten and molybdenum may be deposited.

### The Colors of Colloids. VII.—Blue Feathers

W. D. Bancroft

J. Phys. Chem., 1919, p. 366

The production of blue in feathers is discussed. This color is generally due to the structure, which consists of fine particles of liquids or solids suspended in gases (blue of the sky) or a liquid medium (blue of the eye), or finely divided air-bubbles suspended in a liquid or solid medium (blue feathers).

### Photometers for Measuring the Candle-Power of

A. P. Trotter

Flares, Parachute Lights, etc. Discussion

Ill. Eng., 1918, pp. 253, 269

Instruments are described to measure brightnesses which are of such short duration as to make a setting by manipulation impossible. (Such instruments should be of value in the testing of flash powder.—Abstractor.)

### The Stellar Spectograph of the Victoria 72-Inch Reflecting Telescope

J. S. Plaskett

Astrophys. J., May, 1919, p. 209

The author, who is the director of the Dominion Astrophysical Observatory at Victoria, British Columbia, gives a description of the large reflecting telescope with attached stellar spectrograph, together with statements of some of the results obtained.

### Demonstration of a New Polarizer

G. Brodsky

Proc. Phys. Soc., June 15, 1919, p. 230

The combination of two prisms with a pile of plates so as:— (a) to reduce the length of the polarizer by half; (b) to utilize the full aperture of the pile; and (c) to get rid of all reflected light. (British patent 121908)

### Demonstration of the Uses of "Invisible Light" in Warfare

R. W. Wood

Proc. Phys. Soc., June 15, 1919, p. 232

Describes signalling devices using deep red filters for daylight work and ultra-violet ones for night use. Range was about six miles. For naval convoy work, ultra-violet lamps radiating in all directions were used, the receiver in such cases being a telescope with fluorescent screen.

**Monochromatic and Neutral Screens in  
Optical Pyrometry**

W. E. Forsythe

Astrophys. J., May, 1919, p. 287

The author, at the Nela Research Laboratory of the General Electric Company, gives the results of his investigation of both neutral and monochromatic glasses for use with the optical pyrometer and finds that for practical purposes the neutral glasses are not sufficiently neutral and that his best results were obtained with monochromatic glasses, particularly a red glass from the Corning Glass Company.

**A Further Study of Metallic Spectra  
Produced in High Vacua**

E. Carter and A. S. King

Astrophys. J., 1919, p. 224

The authors, at the Mount Wilson Observatory, have continued their investigation of metallic spectra in high vacua by means of the cathodic discharge. Tables of wave-length and intensities of lines are given together with some spectrograms.

**Vectors and Quaternions. V and VI**

T. Chaundy

Optician, May, 1919, pp. 139, 193

A series of papers dealing with the application of vector methods to optical problems.

**Collision of Alpha Particles with Light Atoms**

E. Rutherford

Phil. Mag., June, 1919, p. 537

A series of four papers dealing respectively with hydrogen, velocity of the hydrogen atom, nitrogen and oxygen atoms, and an anomalous effect in nitrogen. Of many interesting results obtained, the most startling is the breaking up of nitrogen atoms into hydrogen by collision with alpha particles.

**Precision Measurements in X-Ray Spectra**

M. Siegbahn

Phil. Mag., June, 1919, p. 601

A method is described for obtaining much greater precision in determination of the wave-length of X-rays. Measurements are given, with discussion of results.

**Monthly Weather Review, April, 1919**

Brief reports are given of the co-operation of observers connected with the Signal Service and Navy with the Weather Bureau in aerological investigations during the war.

**Monthly Weather Review, March, 1919**

There are several interesting articles and an excellent photograph of a cumulus cloud which had formed over a forest fire by ascending air currents.

### 3. Chemistry

#### (A) General and Inorganic Chemistry

"Physical" vs. "Chemical" Forces

P. V. Wells

J. Wash. Acad. Sci., 1919, p. 361

A critique of the nomenclature used by Irving Langmuir in his remarkable memoir on the constitution of solids and liquids. (J. Amer. Chem. Soc., 1916, p. 2221, and 1917, p. 1848)

The Decomposition of Nitrous Acid

J. Knox and D. M. Reid

J. Soc. Chem. Ind., 1919, p. 105 T.

This investigation was undertaken to determine the influence of various factors on the decomposition of nitrous acid (into nitric acid and nitric oxide) under conditions obtaining in absorption towers. The effects of variations of (1) surface and agitation, (2) concentration of nitrous acid, (3) excess of air, (4) temperature, and (5) concentration of nitric acid were successively determined, the results being given both in tables and plotted in graphs.

The Solubility of Iodine in

N. Schoorl and A. Regenbogen

Mixtures of Alcohol and Water

Chem. Abst., 1919, p. 1553

The solubility follows a fairly regular curve from 0.025 gramme in 100 cc. of pure water to 20 grammes in 100 cc. of absolute alcohol.

#### (B) Analytical Chemistry

The Determination of Cerium in the  
Presence of Other Rare Earths  
by Precipitation as Ceric Iodate

P. H. M.-P. Brinton and  
C. James

J. Amer. Chem. Soc., 1919, p. 1080

The authors have worked out a method for determining cerium by oxidation with potassium bromate and precipitation with potassium iodate in nitric acid solution, followed by conversion of the ceric iodate to cerous oxalate; and they find the method accurate in the presence of even large amounts of other rare earth salts.

Estimation of Zinc and Copper in Gelatin

G. S. Jamieson

J. Ind. Eng. Chem., 1919, p. 323

Describes conditions for precipitation as sulfides and estimation as oxides after ignition.

Reagent for and Method of Estimating Ozone

S. Benoist

Comp. rend., 1919, 168, p. 612

The fluorescence of a solution of fluorescein is destroyed by traces of ozone, the reaction taking place between two molecules of ozone and one of fluorescein, i. e., in the ratio of 0.3 to 1 by weight. An optical arrangement is described which permits of the detection of fluorescence in a 1 in  $10^4$  fluorescein solution, and by using 3 cc. of such a solution it is possible to estimate as little as  $10^{-6}$  gramme of ozone.

Opacimeter Designed for Estimating  
Bacteria

Lambert, Vlès and  
de Watteville

Comp. rend., 1919, 168, p. 797

Bacteria suspended in a liquid are estimated photometrically, using a narrow band filter and optical wedge photometer. (A similar apparatus has been used some time in the Laboratory for measuring turbidity of fumes, of gelatin-alcohol systems, etc.—Abstractor.)

Colorimetric Estimation of Organic Substances

W. Heidenhain

J. Ind. Eng. Chem., 1919, p. 297

Method depends on different tints obtained when varying quantities of substances, e. g., sugars, alcohols, etc., are heated with excess of potassium dichromate solution and compared with the tint given by a known amount of the organic substance.

Estimation of Small Quantities of Acetone,  
Alcohol and Benzene in Air

S. Elliott and J. Dalton

Analyst, 1919, p. 182

The air containing the solvents is aspirated through absorption cylinders fitted with Folin tubes. For acetone the vessel contains standard iodine and sodium hydroxide solution and the excess of iodine is finally titrated. Alcohol is oxidized to acetic acid in another cylinder, using chromic acid; while benzene is converted in a separate absorption vessel to nitrobenzene.

A New Method of Chemical Analysis

A. W. Hull

J. Amer. Chem. Soc., 1919, p. 1168

A beam of monochromatic X-rays, from a molybdenum target, is passed through a small tube containing the powdered substance to be tested; the resulting diffraction pattern is photographed. Each component of the mixture produces its own pattern, by which it may be recognized. The method is capable of quantitative results, applies to all crystalline substances, and gives the state of chemical combination of each element of the substance.

## (C) Colloid Chemistry

The Forms of Dispersion of Metallic Silver

R. E. Liesegang

Koll.-Zeits., 1915, 17, p. 141

The diffusion of silver nitrate and hydroquinone in gelatin gels shows that, within certain concentration ratios, the law of Pringsheim, that a precipitate cannot form on both sides of the interface, does not hold. If silver nitrate solution is allowed to diffuse into gelatin gel containing ferrous sulfate, there results, depending on the concentration of the ferrous sulfate, a flocculent silver precipitate which appears very black, or by slightly increasing the ferrous sulfate concentration a band of green and gray silver of very complicated structure, or finally by still greater ferrous sulfate concentration macroscopic glistening leaves. The last is the densest form, the black form being the least dense. The corresponding reaction with ferrous chloride besides forming much silver chloride leads to so highly dispersed a reduction product (silver) that it may escape observation.

Ultra-Violet Light in the Chemical Arts. XXIII and XXIV (C. Ellis and A.A. Wells) See 1.

The Colors of Colloids. VII.—Blue Feathers (W. D. Bancroft) See 2.

## (D) Organic Chemistry

The Law of Action of Sucrase: H. Colin and A. Chaudun  
Influence of Viscosity on the Speed of Hydrolysis  
Comp. rend., 1919, 168, p. 1274

When saccharose is in excess in respect to the enzyme the speed of hydrolysis is proportional to the fluidity of the solution.

### Parchmentizing Paper

Inland Printer, July, 1919, p. 406

A British patent has been issued to W. Dagnall for rendering paper waterproof, acid-proof, and of great strength, by passing it through two baths of sulfuric acid or sulfuric acid mixed with sulfurous acid, the second being more dilute than the first, the acid being squeezed out after each operation and the paper afterwards neutralized by means of an alkali bath, washed, softened in a bath of glycerine or calcium chloride and dried.

## 4. Technology and Research

The United States Government Chlorine-Caustic Soda Plant at Edgewood Arsenal, Edgewood, Maryland S. M. Green

Chem. Met. Eng., July, 1919, p. 17

A description of the largest chlorine plant in the world.

Chemical Plant Control (The Drain Test) Anon.  
Chem. Abst., 1919, p. , from Chem. Trade J., July 5, 1919, p. 3

The writer's experience with small leaks in acid plants which sum up to large amounts of acid has led him to publish a very simple check test on the effluent acidity. The test is easily carried out by a trustworthy boy. A 50 cc. sample is taken and placed into a conical beaker. This is titrated with decinormal sodium carbonate solution after adding 50 cc. of distilled water and a few drops of methyl orange as an indicator. By multiplying the number of cc. of decinormal sodium carbonate solution used by 10, the parts of sulfuric acid per 100000 are obtained. Hourly tests are made during the day and half as many are made during the night. Then they are

averaged and, knowing the average depth of flow during this time, the results are calculated to tons  $\text{H}_2\text{SO}_4$  per day by the formula:

$$\left\{ \begin{array}{c} \text{Average daily drain} \\ \text{in tons} \\ \text{H}_2\text{SO}_4 \end{array} \right\} = \frac{x}{1000} \times \frac{y \times 10 \times 60 \times 24}{2240 \times 100}$$

where

$x$  = average test on flow in parts of sulfuric acid per 100000, and

$y$  = volume of flow, in gallons per minute, corresponding to the daily average dip.

### Bronze-Coloring of Brass

Phot. Korrr., 1918, p. 76,

from Zeits. f. Feinmechanik, 1917, p. 173

Equal parts of nitric acid, sulfuric acid and water are mixed in such a manner that first the nitric acid is diluted with the water and then the sulfuric acid is added very slowly. The brass piece is dipped for a short time in boiling water, then in the acid solution, then quickly again in the boiling water, then rinsed thoroughly in pure water and dried with sawdust. The brass parts must be free from soldering marks, otherwise spots may occur. The bronzing can be made permanent by a transparent lacquer coat.

### Condition of Research in the United States

A. M. Greene, Jr.

Mech. Eng., 1919, p. 587

This paper, by the chairman of the Research Committee of the American Society of Mechanical Engineers, deals with the conditions under which research is now being carried on in the United States.

### Industrial Research Laboratory Organization

C. E. K. Mees

Mech. Eng., 1919, p. 667

The great value of scientific research, both to the industries and to the nation at large, is now generally recognized. The industrial research laboratory is an important factor in maintaining the supremacy of an industry, and its success depends to a considerable degree upon its relation to the other departments of the company with which it is associated. In this paper these statements are discussed, and the author presents his views regarding the establishment and function of industrial laboratories.

### The Organization of an Industrial Laboratory

A. D. Little and H. E. Howe

Mech. Eng., 1918, p. 663

The authors first outline the aims of a research organization, following which the divisions of the laboratory are discussed, the laboratories of Arthur D. Little, Inc., being taken as a type. The methods of management, writing of reports and the commercial organization of the laboratory are also discussed at some length, the paper concluding with a description of the building and equipment best suited to carry on this type of work.

### A Movement to Develop Research in Colloid Chemistry

H. N. Holmes

J. Ind. Eng. Chem., 1919, p. 794

This is an informative article by the chairman of the new colloid committee of the National Research Council.

**Research Work on Malleable Iron**

E. Touceda

Mech. Eng., 1919, p. 593

This paper contains an account of four years of research work undertaken for the American Malleable Castings Association as a plea for industrial research among manufacturers and as a striking example of what such research can accomplish.

## Books

### Recent Accessions to the Library:

**Methods of Measuring Temperature**

E. Griffiths

C. Griffin &amp; Co., London

This book gives a full account of the five main methods by which temperature is now measured viz., the mercurial thermometer, the resistance thermometer, the thermocouple, the full-radiation pyrometer and the optical pyrometer. The apparatus described is mostly from the equipment of the National Physical Laboratory.

**Recent Discoveries in Inorganic Chemistry**

J. Hart-Smith

University Press, Cambridge, England

In spite of a certain disconnectedness in the preface dealing with atomic structure and radiation this little book should fill a useful place as a supplement to existing text-books, covering as it does the results of the past fifteen years arranged under the periodic classification.

**Dyeing with Coal Tar Dyestuffs**

C. M. Whittaker

Baillière, Tindall &amp; Cox, London

This volume, which is one of a series of monographs on industrial chemistry edited by Dr. Samuel Rideal, is evidently the work of a man who is thoroughly familiar with his subject. While including all types and expounding each with full detail, general considerations are not buried in a mass of unessential information and the discussions introducing each chapter are well written both as to matter and style. An excellent work.

**The Chemistry of Essential Oils**

E. J. Parry

and Artificial Perfumes

Vol. I.—Monographs on Essential Oils

Vol. II.—Constituents of Essential Oils, etc., and Analysis of Essential Oils

Scott, Greenwood &amp; Son, London

This is the standard work on the subject in the English language, and the present (third, revised) edition has been brought well up to date.

**Handbook of Antiseptics**

H. D. Dakin and E. K. Dunham

Macmillan Co., New York

This little book deals with the more recent development of the technic of antiseptics; in particular of those employed in surgical practice during the war. Particular attention is given to the use of chloramines. The chapter on the use of dyes as antiseptics covers a highly suggestive field.

## Patent Abstracts

### U. S. Patents

1308538 P. D. Brewster. K/43  
Assigned to Brewster Film Corporation

A Positive Photographic Film having registered images on the opposite sides, one of them being a pure dye image and the other being a dyed silver image.

1308708 A. Hamburger K/43

A Process of Making Color Photographs which consists in printing registering images upon both sides of a sensitized film and in submitting these two sides simultaneously to dissimilar baths to produce different color effects.

1308710 A. Hamburger K/43

A Tank for Treatment of Double Coated Film upon which pictures have been printed and developed in registry. The film separates the tank into two compartments and different dyes are poured into each compartment so that the two sides are differently colored.

1306904 F. E. Ives K2652

A "Plate Pack" designed particularly for Color Photography. Provision is especially made for the prevention of halation by partially screening certain of the color-sensitive plates against the color to which they are sensitive.

1307325 D. R. N. Taylor A07211

A Step and Repeat Printing Apparatus consisting of a table having an aperture illuminated from underneath to contain the negative, over which aperture a large sensitized plate or paper can be moved by means of two worm shafts so that the whole surface may be filled with prints in exact position for register work if necessary.

1307824 W. R. B. Larsen A07332

Method of Making Half-Tone Screens. A method of producing a small white space in the corner of every black line and in the center where the two black lines cross. The object is to get increased contrast by having fewer dots to print in the high-lights.

1308985 A. C. Fisher. 2101  
Assigned to E. K. Co.

A Camera with a Folding Bed in which the lens board is automatically projected to operative position when the camera is unfolded.

1307512 M. Niell 2131

A Camera Having a Focal Plane Shutter. When the sensitive surface is concealed by the shutter, an opening in the shutter is positioned above the surface. The front side of the shutter carries an opaque focusing screen, which is viewed through the upper opening and a mirror within the camera.

1308617 P. J. Besosa 2152

A Double Exposure Prevention Device in which, after actuation, the shutter is locked until the film has been turned. The frictional contact with the film controls the release for the shutter-locking means.

1308991 W. J. Parkinson, W. A. M. Wells and P. W. Tierney. 2152  
Assigned to E. K. Co.

A Roll Film Camera in which the film is wound upon the take-up reel by the actuation of a lever. This lever by a multiplying gear rotates the reel the necessary amount. Provision is made whereby the amount that the reel is rotated is automatically adjusted to compensate for the increasing size. Provision is also made for the prevention of double exposures. The winding operation can be conducted only after an actuation of the shutter and the shutter can be actuated only after the film has been wound.

1307220 A. W. Straight 231

A Flashlight Apparatus for actuating the camera shutter and igniting the flash. It is so constructed that the flash must be necessarily set off before the actuation of shutter.

1308334 F. E. Cooper 231

A Flash Cabinet on the back of which a receptacle contains a supply of powder. The ignition pan can be slid out through a hole in the rear underneath this supply and a vending device automatically measures the amount of the charge and pours it into the pan. The pan is then replaced in the cabinet and is electrically fired simultaneously with the actuation of a camera shutter.

1306946 J. G. Capstaff. Assigned to E. K. Co. 242

A Printing Frame designed especially for the printing of two images from opposite sides upon a sensitive element. Provision is especially made for various and accurate adjustments to permit work with different thicknesses and sizes of plates and for proper registry of the images.

1307751 F. A. G. Pirwitz. Assigned to E. K. Co. 2623

A Photographic Shutter involving improvements in the blade-actuating mechanism, the relation of the retard to the actuating mechanism and other features.

1308642 H. F. Prefontaine 2626

A Shutter-Operating Attachment for Cameras which is controlled by a string, so that a person taking the picture can be included in the field.

1306958 C. W. Frederick and F. E. Ross. 2634  
Assigned to E. K. Co.

A Photographic Objective comprising two biconcave lenses having all four radii of curvature equal and two outer air-spaced positive lenses that are unsymmetrical.

1305984 J. Becker. Assigned to E. K. Co. 264

A Direct View Finder for Cameras consisting of two halves of negative lenses placed one behind the other and enclosed between frames. The field of the picture is determined when the observer perceives the front and rear frames in register through the finder.

1307339 J. Becker. Assigned to E. K. Co. 2645

A Focusing Camera Having a Pivoted Mirror, a radial cam fitted to one side of the mirror and mechanism connecting the mirror to the radial cam, whereby the proper focusing is effected. Numerous modifications of the principle claimed are described.

1306881 B. D. Chamberlin. Assigned to E. K. Co. 2653

A Photographic Film Spool with a Metal Core and Flanges attached together by interlocking parts.

1307598 W. E. Phillips. Assigned to D. H. Saville 2674

An Attachment for Cameras Placed in Front of a Lens. It consists of two oppositely tapered prisms which can be tilted at any desired angle symmetrically or unsymmetrically in relation to each other to produce various degrees of distortion.

1307846 L. S. Brainerd 062

A Method of Producing Motion Pictures involving the correlation of a series of cartoons and moving characters. Connected with the camera by a clutch is a projection apparatus. At any desired time, by throwing the clutch, a series of pictures can be thrown upon a screen in the field of the camera to add desired backgrounds or figures to the actual objects in such a field.

1307074 S. N. Baruch 068—319

A Method designed to produce a Stereoscopic Effect in Motion Pictures. The pictures are taken through two lenses. In a series of pictures the first will be taken through one lens; the second will be taken half through one lens and half through another; the third will be taken through the second lens only; the fourth will be taken half through the second lens and half through the first lens, and the fifth will be taken entirely through the first lens.

1304854 E. W. Clark. Assigned to Photo Motion Co. 3201

A Mechanical Movement for Motion Picture Machines of the film-beater type.

1305971 M. L. Parret 3201

A Film Guide and Tension Device for motion picture projecting machines.

1308443 J. G. R. O'Hara 3201

Assigned to Educational Motion Picture Machine & Film Co.

A Film Guide for use in Motion Picture Projection Apparatus.

- 1308984 H. R. Evans, deceased 3201  
A Film Guide for Motion Picture Machines of the film-beater type.

- 1309471 H. R. Evans, deceased 3201  
Film Feeding Means for Motion Picture Machines of the film-beater type. The film is allowed to complete its stepping movement under a yielding force and under its own momentum.

- 1307984 M. E. Myers and M. A. J. Harper 3203  
A Motion Picture Shutter having translucent areas between the projection openings and in these areas small transparent portions with apertures therein.

- 1308494 C. F. Jenkins 3203  
A Motion Picture Shutter in which provision is made for angular and longitudinal adjustment.

- 1307554 S. Kohn 3204  
A Reel for Motion Picture Films with special means for locking the end of the film to the guard.

- 1308444 J. G. R. O'Hara. 3208  
Assigned to Educational Motion Picture Machine & Film Co.  
A Motion Picture Projecting Machine in which the takeup reel is connected by an adjustable gear arrangement with the feed, and the relative position of the two can be shifted.

- 1307541 B. G. Downer. Assigned  $\frac{1}{2}$  to G. H. Hines 3209  
An Attachment for Motion Picture Machines for the prevention of fire. It consists of a roll which is spring-pressed against the film. Should the film break, a shutter is operated.

- 1307957 J. A. Cameron 3209  
A Motion Picture Machine in which a radiating shield is placed in a ventilating space to carry off heat.

- 1308207 H. A. Tolles and G. H. Ernsbarger. 321  
Assigned  $\frac{1}{2}$  to J. D. Blunt and D. A. Hessick  
Method and Apparatus for Producing Motion Pictures in which pictures are taken through two lenses. These are projected alternately so that the screen is left at no time dark, flicker being thus avoided.

- 1308293 E. E. Maggard 321  
A Motion Picture Projecting Apparatus in which an endless film is used. A double loop of the film is wound into a supply reel and another double loop is attached to the reel of the takeup roll, one strip passing from the supply roll through the projection apparatus to the takeup roll and the other passing directly thereto. When the film has been entirely wound on the takeup roll, it is shifted to the position of a supply roll and that portion of film which was fed directly thereto is now fed through the projector.

1309087 H. A. DeVry. Assigned to the DeVry Corp. 321

A Motion Picture Machine provided with means for adjusting the lens carrier relative to the film for focusing purposes.

1307323 S. F. Stein 323

A Combined Motion Picture Projector and Phonograph, the phonograph being telephonically connected with a multiple circuit. Each spectator has a separate receiver so that he can listen to the accompaniment or not, as he desires.

1308875 L. S. Stiles. Assigned  $\frac{1}{2}$  to J. J. Kuhn 323

A Motion Picture Machine and Talking Machine are operated from the same source of power. The structure is intended particularly for the teaching of dancing steps, physical exercises, etc. It can be stopped at any time to show any particular position.

1308468 E. H. Amet 324

A Projection Screen made of Woven Wire Fly Screen heavily coated with white paint. The meshes are not entirely filled, however, a small aperture being left through each. A black background is placed at some distance behind the screen.

## British Patents

126220 J. Shaw K/23

Color Cinematography. In taking cinematograph pictures for projection in colors, color screens are used in which each alternate color is red or of a red shade. Each group of six negatives is taken through a synchronized color screen, alternate pictures being taken through a red screen and the remaining ones through green, yellow and blue. The film consisting of such groups may be projected through a screen of two colors, red and green affecting alternate pictures having red or orange-red filters, and yellow-green and blue-green may be used, alternate groups of six pictures being affected by the filters. The gelatin of the film may be tinted red and green alternately or with the shades of the screen in succession and projected without screens. A yellow filter may be substituted for the blue or vice versa.

125927 S. Wainwright 045

Lantern Slides. A Frame for Holding a Lantern Slide on which matter is to be inscribed comprises a frame with side ledges, a spring for holding the slide and a detachable cover-plate which forms a hand-rest. One of the side ledges has a scale.

125826 J. M. C. Josephson 1212

Cinematograph films. Cinematograph Films are Reinforced by pasting or otherwise securing to them strips of canvas, silk, calico, or similar flexible material between the perforations and the pictures. The strips may be applied to one or both sides of the films. Specification 5087/12 is referred to.

126149

Kerotype Ltd., and T. P. Middleton 1375

**Photographic Printing-Paper and Transfer Processes.** Relates to improvements in the manufacture of photographic printing and transfer paper of the kind described in Specifications 29618/12 and 12091/15. The waxed basis of paper, etc., is provided with a resinous substratum which is obtained from a solution or suspension in a mixture of solvents of two resins or a single commercial resin which comprises two constituent resins. The solvents are chosen so that, on evaporation of one of them, one of the resins is precipitated in the form of a fine grain whilst the other still remains in solution in the remaining solvent in the form of a varnish. The varnish thus dries with a matt surface. In a particular example, 90 grains of sandarac and 20 grains of mastic are dissolved in a mixture of  $4\frac{1}{2}$  ounces of alcohol and  $1\frac{1}{2}$  ounces of acetic ether. After the web of paper is coated with wax in a vessel, excess of wax being removed by rollers, it is polished by a buffing-disk, and then passes between rollers, one of which supplies the substratum of resins. Excess is removed by a spring-pressed wiper, and then the web passes through a heated drying-chamber, from which fumes are removed by means of a fan. Emulsion is now applied from a vessel and the web after being carried by means of endless tapes through a cooling-chamber is allowed to dry in a looping-machine.

125818

S. P. Twemlow 213

**Collapsible Cameras.** The lens-carrying front is supported in the forward position by hinged flaps, and held in position by stops and spring catches. One of the flaps may have a fixed notch in lieu of a stop and spring catch. The flaps have curved arms for limiting their opening.

126814

E. J. Sweetland 2541

**Photographic Developing-Apparatus.** Apparatus for the daylight developing of roll films or plates comprises a flexible collapsible tube open at one or both ends, the said ends being adapted to be closed by folding and secured by a clamp or clamps.

127058

A. Taylor and H. D. Taylor 2634

**Lenses.** A triple combination lens for photographic or telescope objectives comprises a double convex positive lens of low refractive index enclosed between and optically united to, or cemented to, two meniscus negative lenses of very high refractive index and approximately equal power. Two such lenses placed close together may be used to form a photographic objective of aperture substantially one-half to one-third of the equivalent focal length.

126745

E. C. R. Marks 0648

**Coloring Cinematographs.** Cinematograph and other films are colored by making a negative from a positive film in which the parts to be colored are stopped out with a material impenetrable by light, immersing the negative in a bichromate or like solution to render the image impervious to liquid, dyeing the portions without image, and bringing the negative and the positive to be colored into contact in correct register, and subjecting them to pressure; the films are brought into contact on the surface of a cylinder which may be continuously rotated, and one or both of the films may be stretched to obtain correct register.

126004

R. H. Bataille 3203

**Cinematograph Apparatus.** The blades of the shutter are formed with multiple openings of small dimensions, such as slits, in order to allow a certain amount of light to pass as each blade passes across the projecting beam.

126651

A. Villers 324

**Optical-Projection Apparatus.** A projection screen consists of a single piece of cotton fabric covered first with a layer of colloid, such as Malines glue to which is added white lead, and polished with pumice-stone. A further coating of white lead is applied, followed by a coating made of white lead, venetian turpentine, and dutch oil, this coating being polished or smoothed to remove all traces of the brush. Finally powdered silver is applied with a polishing pad or ball.

### German Patents

304737

W. Scheffer C

**Fine Grained Emulsion.** The solutions are mixed together through one or more dialyzing membranes while the contents of the vessel are kept in constant motion. If necessary the solutions are under pressure and of different temperatures. (Phot. Ind., 1918, p. 250)

302817

Kraft and Stendel J81-1665

**Palladium Toning of P. O. P.** The toning bath must contain at least 0.3% concentrated hydrochloric acid and at least 1% alum, and the fixing bath must consist of pure ammonia solution. After printing, the prints must be carefully washed in a chloride solution. The paper is passed quickly through the preliminary gold bath, very quickly as in platinum toning. A short toning in the gold bath gives brown tones and a long toning bluish tones. The palladium bath consists of 1 gramme potassium chloropalladite, 25 cc. hydrochloric acid solution 1:5, 15 grammes alum and 1500 cc. water. After 10 minutes washing the prints are fixed in a solution containing 30 cc. of the strongest pure ammonia to 1 liter of water. (Phot. Korr., 1918, p. 252)

300388

O. Hoel 2652

**Changing Box for Photographic Plates** with one light-tight aperture in the lid and another in the bottom of the box for loading and unloading the plates, characterized by the fact that each of the apertures which correspond with the thickness of the plate holder is closed by a valve which is pushed aside when the plateholder is put into one of the apertures of the box so that the plates can be safely put in and taken out. (Phot. Korr., 1918, p. 118)

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# Monthly ABSTRACT Bulletin



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# Monthly Abstract Bulletin

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## Addition to Numerical Classification

L9 Storing Negatives.

# 1. Photography

(NOTE.—The symbol appearing to the right of the title and above each abstract is the index symbol according to the classification in use at the Laboratory.)

- Application of Einstein's Law of W. Nernst 012  
Photo-Chemical Equivalence

Chem.-Zeit., 1918, p. 198

Experiments with bromine with hexahydrobenzene as acceptor agreed well with Einstein's law at a wave-length of 4760 Å. U.

- Light-Sensitive Constituents of Soft Coal J. M. Eder 012  
Phot. Korr., 1918, p. 275

Soft coal as well as hard coal contains substances soluble in chloroform, benzene, ether, acetone, etc., and which, like resin and asphalt, lose their petroleum-solubility when exposed to light.

- The Perbromide Theory of Solarization Lüppo-Cramer 014  
Chem.-Zeit. Übersicht, 1918, p. 84,  
from Phot. Korr., Dec., 1916

Homolka supported this theory by the statement that the treatment of a solarized silver bromide emulsion film with a reducing agent restores its original light-sensitiveness. The author proves that silver nitrate acts exactly like sodium nitrite. Hence it is a question of a halogen-binding, and not of a reducing, action.

- Construction and Standardization of a L. P. Clerc 016  
Simple Sensitometer  
Bull. soc. franç. phot., 1919, p. 177

Conditions are given for the standardization of a sensitometer tablet made from layers of paper.

- Plate Tests—A Suggestion to the Royal H. E. Rendall 016  
Photographic Society  
B. J., 1919, p. 447

The correspondent thinks that the Royal Photographic Society should undertake tests of plates, papers and cameras. He suggests that plates should be tested for gradation, latitude and keeping quality, and cameras for parallelism of lens with plate, registration and accuracy of focusing scale.

- The Acceleration of Development by Lüppo-Cramer 017  
Mercuric Iodide

Chem.-Zeit. Übersicht, 1918, p. 84,  
from Phot. Korr., Nov., 1916

Potassium mercuric iodide acts in the developer exactly like potassium iodide alone.

- A Review of Color Photography H. E. Rendall K21  
B. J. Col. Sup., 1919, p. 31

The first part of the article deals with the methods of exposure, the author giving his own experience of various methods of making color negatives.

- High Temperature Development G5—055  
B. J., 1919, p. 460

According to a British patent, No. 128337, taken out by Ilford Ltd., photographic materials are hardened before development by immersing in a bath containing formalin and sodium sulfate.

- Guide Negatives and Prints J. R. Hall G5—J3  
B. J., 1919, p. 491

The author recommends the use in the developing room of a set of negatives which can be illuminated at will as a guide to the developer, and in the printing room of a similar set of prints. The prints are placed back to back, bound between two glasses with lantern slide binding, the two prints being the style most required and the next most common type. In use, they are left lying on the bench close to the lamp so that a glance will show whether a print being developed is really as dark as it should be or not.

- Practicus in the Studio—Reduction of Negatives H1  
 and Prints  
B. J., 1919, p. 499

Description of the various reducing methods applicable to a portrait negative.

- Reducing Contrast H1  
B. J., 1919, p. 465

Attention is called to the use of chromium intensifier for reducing the contrast of a negative, the procedure being to bleach as usual and then partially redevelop with amidol, stopping development and transferring to a normal fixing bath, which dissolves the portion of the dense image which has not been reconverted to silver.

- Practicus in the Studio—Intensifying Portrait H2  
 Negatives  
B. J., 1919, p. 439

Deals with the use of mercury and chromium intensifiers for portrait work.

- Chromium Intensification A. and L. Lumière and H2—1653  
 with Chlorochromates A. Seyewetz  
B. J., 1919, p. 451

The authors use chlorochromates of the alkali metals as intensifiers in place of the usual chromium intensifier. Using such intensifiers they find that the process can be repeated as often as six times. It is pointed out by the editor that the chlorochromates have previously been used in commercial preparations for chromium intensifiers.

## Uneven Drying of Negatives

H3—041

Chem.-Zeit. Übersicht, 1918, p. 116,  
from Phot. Chronik, 1917, p. 51

If a negative is not dried at a uniform rate density-differences arise. Quick drying produces a comparatively dense and contrasty negative. Hence a flat negative should be dried quickly and a contrasty one slowly.

## Multiple Vignettes with Print-Out Papers

E. A. S. J8—243

B. J., 1919, p. 468

Detailed description of procedure worked out by a platinotype expert for multiple vignette printing.

The Influence of the Method on the Image Tone  
in the Sulfur Toning Methods

Florence J84

Chem.-Zeit. Übersicht, 1918, p. 116,  
from Atel. Phot., 1917, 24, p. 21

If all the silver were converted to sulfide, the tone would be the same by any method. However, if untransformed silver remains, a darker tone results. A lighter tone is obtained if the silver is converted intermediately to bromide. (As yet unpublished experiments carried out in the Research Laboratory show that the observed tone-differences cannot be explained by this author's suggestion of variations in the degree of completeness of conversion.—Abstractor).

## Flattening Postcards

J. Stanley J9

B. J., 1919, p. 463

Describes a simple apparatus for applying pressure.

## Practicus in the Studio—The Keeping of Negatives

I.9

B. J., 1919, p. 489

Discussion of various methods of storing portrait negatives.

## Marginal Fogging of Stored Plates

Lüppo-Cramer 041

Chem.-Zeit. Übersicht, 1918, p. 84,  
from Phot. Rund., 1917, p. 32

Homolka explains this by a diffusion of the potassium bromide of the drying gelatino-bromide emulsion from the margin towards the center. According to R. E. Liesegang there is a similar diffusion from the surface to the back of the film. He thinks that this explains the fog which occurs in physical development and which can be rubbed off.

## Defective Tones of Bromide Prints

041

Chem.-Zeit. Übersicht, 1918, p. 84,  
from Phot. Rund., 1917, p. 33

Most defects are due to wrong exposure and unsuitable developers rather than to the paper itself.

## Another Strange Case of Reversal

041

Photo Era, Aug., 1919, p. 97

Alternate exposures on a 6-exposure roll film gave positive images; and the explanation offered is that as the camera was carried in the sun for some time with extended bellows before exposing each of the three films which subsequently developed as positives sufficient light and heat to affect the film area in position leaked through the bellows and produced conditions conducive to reversal.

## Stereoscopic Photography

043

Photo Miniature, June, 1919, p. 281

An historical and practical monograph on the subject—including a descriptive catalog of present-day stereoscopic apparatus.

## Comparative Notes on Methods of Making Enlarged Negatives. I

046

B. J., 1919, p. 467

Classification of the processes used for the purpose.

## Comparative Notes on Methods of Making Enlarged Negatives. II

046

B. J., 1919, p. 498

Leading article dealing with the methods which depend on making a small transparency and producing from it an enlarged negative on plate, paper or film.

## About Bromide Enlarging

F. B. Howe

046

Camera Craft, Aug., 1919, p. 304

Gives valuable hints on "dodging".

## Night Photography. I

R. Dykes

0582

B. J., 1919, p. 484

The first of a series of articles on this subject, giving a general résumé, making suggestions as to apparatus and methods of procedure.

## Night Photography. II

R. Dykes

0582

B. J., 1919, p. 501

The author deals with the choice of plates, recommending the use of the quickest plate obtainable, and also with questions of exposure and development. Working at f/11, exposures of from 15 to 20 minutes are recommended. A weak pyro-soda developer is used, it being considered that such a weak developer prevents over-development of the highlights.

## The Photographic Section of the Royal Air Force

083—084

B. J., 1919, p. 482

Editorial criticizing a proposal for an extensive program of photographic aerial surveying to be carried out by the Section. It is urged that the Section should devote itself to experimental work on military photography in order to keep fully in touch with progress, and to be prepared for any eventualities which might arise, but that a large scale program of photo-surveying should not be undertaken at a time

when the use of aerial photography is in the experimental stage and when it is still unproved that it is a satisfactory substitute in all cases for the methods of the surveyor.

083

B. J., 1919, p. 510

Letter from correspondent, H. H. Thomas, stating that the suggestions made by the Photographic Section of the Royal Air Force were intended for the adoption of civilian photographic bodies.

Mapping from Air Photographs M. N. MacLeod 083—084

B. J., 1919, p. 503

Description of the method employed by the Intelligence Branch of the General Staff in making maps from airplane photographs during the war. This is the first part of the article only, but concludes with the remark that in flat country, particularly close, well-wooded country, mapping from air photographs is undoubtedly quicker than and just as accurate as any other method of map survey.

The Photographic Correction of Negatives Taken Obliquely. III 083—084

B. J., 1919, p. 440

The last installment of this paper.

Photographic Surveying H. Löschner 084

Phot. Korr., 1919, pp. 232, 270

A new geodetic method is described.

Photographic Analysis of Eggs G. A. LeRoy 089

Bull. soc. franç. phot., 1919, p. 174

The age of an egg can be told from the size of the air chamber contained in it. In the Municipal Laboratory at Rouen this fact has been used for the testing of eggs by printing the light transmitted through them upon a plate furnished with a scale.

Photomicrography Without a Microscope G. Ardaseer 0941

B. J., 1919, p. 483

Gives brief working directions.

Sepia Platinum and Sepia Palladium Papers R. Jacoby /73—/76

Phot. Korr., 1918, p. 193

I. A platinum paper free from mercury is made by coating a 50 x 65 cm. good raw paper, which is sized in the usual manner for the sepia process, with the following mixture:

Potassium chloroplatinite solution 1:7	-	-	3.5 cc.
Normal iron solution according to v. Hübl	-	-	3.5 "
Lead-iron solution according to v. Hübl	-	-	3.5 "
Potassium bromide solution 1:8	-	-	2 "
Potassium chloropalladite solution	-	-	5 drops

Development is effected with a potassium oxalate solution to which, according to the required tone, varying quantities of a "sepia solution" are added, the mixture heated up to 80-100 C. and then cooled.

Good results can be obtained with the following formulae:—

For warm, brown tones:

Water	-	-	-	-	-	300 cc.
Potassium oxalate	-	-	-	-	-	30 grammes
"Sepia solution"	-	-	-	-	-	50 cc.

For bright sepia tones:

Water	-	-	-	-	-	200 cc.
Potassium oxalate	-	-	-	-	-	30 grammes
"Sepia Solution"	-	-	-	-	-	100 cc.

The "sepia solution" is prepared as follows: 130 grammes citric acid are dissolved in 300 cc. water in a liter flask and little by little 120 grammes anhydrous sodium carbonate are added. As soon as the evolution of carbon dioxide ceases the mixture is heated on the waterbath. Then 21 grammes ammonium chloride, 54 grammes mercuric chloride and 2 grammes of copper sulfate are added.

The solution keeps well in brown bottles.

II. Sepia palladium papers must first be treated with agar-agar or arrow-root. Gelatin is not advisable. The following solution is used for sensitizing:

Potassium chloropalladite 1:14	-	-	-	-	10 cc.
Mono-basic ammonium phosphate ( $\text{NH}_4\text{H}_2\text{PO}_4$ )	-	-	-	-	0.7 gramme
Magnesium ferric oxalate solution	-	-	-	-	10 cc.
Cane sugar	-	-	-	-	1.5 gramme
Sodium chloroplatinate solution 1:10	-	-	-	-	6 drops

For development:

Water	-	-	-	-	-	500 cc.
Potassium oxalate	-	-	-	-	-	50-100 grammes
Mono-basic ammonium phosphate	-	-	-	-	-	50
Glycerin	-	-	-	-	-	50

The tones depend upon the temperature of the bath.

Kallitype

Phot. Korr., 1918, p. 318

R. Jacoby /74

Several processes with silver sulfate and either ferric citrate or green ferric ammonium citrate are described.

When a V. P. Scored

B. J., 1919, p. 466

215

Editorial note calling attention to the value of the vest pocket camera where great depth of focus is necessary.

A Holder for Bromide Paper on the  
Enlarging Easel

G. H. Eustace 2237

B. J., 1919, p. 446

The holder suggested consists of wooden rods fastened to the easel by rubber bands passing through holes in the easel, thus making a four-cross-bar frame behind which the paper can be placed.

- Metal Dishes for Hypo-Alum Toning Bath E. R. Bullock and J. I. Crabtree 251

B. J., 1919, p. 447

A note from the Research Laboratory confirming the belief of the editor of the B. J. that lead-coated dishes are not suitable for hypo-alum toning.

- Yellow Filter and Shutter Speed Wurm-Reithmayer 2661  
Chem.-Zeit. Übersicht, 1918, p. 84,  
from Phot. Rund., 1917, p. 37

When making comparison exposures to determine the factor for the use of a yellow filter, it must be borne in mind that the marked speeds of most shutters are not exact.

- Photographic-Vision Filters for Orthochromatic Photography 2664  
B. J., 1919, p. 474

The Ilford Company have placed on the market the special filters worked out by Renwick, by which a scene can be viewed with the appearance which it will have when photographed by means of a given plate.

- Printing on Wood for Engraving E. L. Turner 07324  
B. J., 1919, p. 460

Three formulae are given for printing an image on a wood block.

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## 2. Physics

- The Speed of Adjustment of the Eye for Clear Seeing at Different Distances C. E. Ferree and G. Rand  
Optician, July 25, 1919, p. 319 and Aug. 1, p. 334

The working distance for the far object was 6 meters, for the near object 18 centimeters. The time required for 18 normal observers to adjust from near to far was found to range between 0.50 and 1.16 seconds; from far to near the range became 0.39 to 0.82 second. The apparatus and method has been used in France and at Miniola for testing aviators.

- The Colors of Colloids. I W. D. Bancroft  
J. Phys. Chem., 1918, p. 601

A theoretical paper in which the author discusses the nature of the color of natural objects. The subject is treated historically and the various types of coloring are individually treated. Colors are divided into two groups, viz., (1) structural colors, owing their existence to refraction, absorption or interference of light, and (2) pigmentary colors.

- The Colors of Colloids. II W. D. Bancroft  
J. Phys. Chem., 1919, p. 1

The author reviews the laws of reflection and refraction applicable to the effect of light on thin films and colloidal particles, deals with the relation of absorption to

reflected and transmitted light, normal and anomalous dispersion and the effect of these on color, and discusses partial and total reflection and plane, circular and elliptical polarization.

### The Colors of Colloids. III and IV

J. Phys. Chem., 1919, pp. 154, 253

These are theoretical papers in which the discussion commenced in the previous papers is continued. III deals with the effects produced by reflection from natural objects and its influence on visibility. In IV the influence of interference and diffraction of light is considered.

### The Photometric Scale

H. E. Ives

J. Frank. Inst., Aug., 1919, p. 217

The author offers a complete method for establishment of a photometric scale; treating such factors as: (1) conditions of observation, (2) method of choosing observers, (3) the visibility function, (4) the value of the lumen in terms of the watt of luminous flux, (5) standard of luminous intensity, and (6) standards of color difference.

### Recent Progress in the Manufacture of Glasses

W. W. Coblenz

#### for Protecting the Eye from Injurious Radiations

J. Frank. Inst., Aug., 1919, p. 255

The spectral energy transmission curves of many different glasses are given, including some excellent samples of protective glasses.

### Foveal and Parafoveal Vision

Ogata and F. W. Weymouth

Optician, June 20, 1919, p. 248

A series of experiments made to determine the cause of difference between daylight and night vision. In some cases the difference is found to be due to pupillary size, in others to a difference between foveal and parafoveal vision. It is recommended that persons holding responsible positions as railroad engineers have their eyes tested dark adapted.

### The Experimental Investigation of Crystal Structure by Means of X-Rays

R. Gross

J. Chem. Soc., 1919, p. ii. 272

The author, in the *Jahrbuch der Radioaktivität und Elektronik* (1918, p. 305), gives a useful account of the methods which have been worked out for investigating crystal structure by means of Roentgen rays. He considers that there are probably no true amorphous solids—only crystals, and liquids with varying degrees of viscosity up to the high viscosity of the glasses.

### Estimation of the Size and Internal Structure of Colloidal Particles by Means of X-Rays

P. Scherrer

J. Chem. Soc., 1919, p. ii. 274

The author, applying the method of Debye and Scherrer (*Physikal.-Zeits.*, 1916, 17, p. 277) to the determination of the size and structure of typical inorganic and

organic colloids, obtains interesting results. He is able to observe the characteristic space-lattice in gold particles so minute as to be far below the lower limit of the ultra-microscope. Old silicic acid and stannic acid gels gradually acquire the characteristics of crystalline substance. Typical organic colloids (albumin, gelatin, casein, cellulose, starches, etc.) appear to be amorphous; the colloid particles probably therefore consist either of individual molecules or of groups of irregularly oriented molecules.

Alignment Chart for the Gas Laws

A. G. Wikoff

Chem. Met. Eng., Aug. 15, 1919, p. 195

Some Points regarding Calorimeter Efficiency

W. P. White

Chem. Met. Eng., Aug. 15, 1919, p. 187

Sources of error. Advantages of different types for moderate precision in commercial work. Superiority of an installation with a stirred, thermostat-regulated jacket and an electric thermometer.

The Design of Optical Munitions of War

R. S. Whipple

Nature, 1919, 103, p. 475

A description, in brief, of the various optical instruments used by the British Government, the uses to which they were put, and also the shock tests of said instruments.

Industrial and Agricultural Chemistry in British Guiana

C. A. Browne

J. Ind. Eng. Chem., Sept., 1919, p. 874

Contains very interesting account on page 881 of care needed for optical instruments in the tropics, especially the glass lenses which become etched and corroded by a mold peculiar to humid localities in the tropics.

Atmospheric Polarization

A. Hofmann

Phot. Korr., 1918, p. 103

Instead of focusing the sky itself it is observed in a small silvered glass sphere of 12—15 cm. diameter. The zone of negative polarization lies usually around the sun. It is determined above and below by the two neutral points. These should be considered as centers of neutral lines. The shape and modifications of these neutral lines were observed at various altitudes of the sun. There seems to be a connection between some irregularities of the lines and changes in the atmospheric conditions which needs further investigation.

### 3. Chemistry

#### (A) General and Inorganic Chemistry

##### Platinum from Nickel-Refining Residues

W. McA. Johnson

Chem. Abst., 1919, p. 1797

Material relatively rich in platinum is obtained from the residue from the electrolysis of commercial nickel by subjecting the residue to a separation process to classify it into coarse and fine particles and then subjecting the fine particles to a further settling treatment to classify them into sludge and fine slimes, which latter are comparatively rich in platinum. (U. S. Patent 1299677).

##### Notes on the Cyanidation of Silver Ore

F. A. Malins

Chem. Abst., 1918, p. 2518

*Inter alia*, the statements are made that silver sulfide, on prolonged exposure to air and moisture, becomes converted to silver in accordance with the equation,  $\text{Ag}_2\text{S} + \text{H}_2\text{O} + 3\text{O} = 2\text{Ag} + \text{H}_2\text{SO}_4$ , and that there exists the possibility of a subsequent conversion of silver to silver sulfate. (That silver sulfide is not in all respects a very stable compound is suggested by the unusually small value of its heat of formation from its constituent elements. It is the extreme lowness of its solubility in water which conditions largely the observed permanency of sulfide-toned prints.—Abstractor).

##### Solder for Aluminium or Aluminium Alloys

Chem. Abst., 1919, p. 1818

The solder had the composition: tin, 60%; lead, 12%; silver, 10%; aluminium, 4%; cadmium, 4%; copper, 4%; antimony, 2%. The method of producing this alloy is given. (French Patent 485344).

##### Solder for Aluminium

A. H. Alexandre

Chem. Abst., 1919, p. 1818

Tin, 61 parts; zinc, 36 parts; silver, 1—2 parts. (U. S. Patent 1301633).

##### Electrical Conductivity and Other Properties of Saturated Solutions of Copper Sulfate in the Presence of Sulfuric Acid

H. M. Goodwin and W. G. Horsch

Chem. Met. Eng., Aug. 15, 1919, p. 181

Measurements, with graphs, for conductance at 25°C. of saturated copper sulfate solutions containing from 0.5 to 3.6 gramme-equivalents of sulfuric acid per liter.

##### Production of Hydrogen Peroxide

D. Levin

Chem. Abst., 1919, p. 1795

Hydrogen peroxide is made in a continuous process by electrolyzing a solution of sodium hydrogen sulfate to produce a 15% solution of sodium persulfate, separating the hydrogen peroxide from the solution by distillation, purifying the electrolyte with hydrogen sulfide and then re-electrolyzing it. (U. S. Patent 1299485).

New Method for Preparation of Ammonium  
Iodide

E. Rupp

J. Chem. Soc., 1919, p. ii. 283

From ammonia, iodine and hydrogen peroxide, with shaking until solution is effected, warming until the color is discharged, and evaporation of the liquid. (Hydrogen peroxide acts in these circumstances as a chemical reducing agent.—Abstractor).

The Congo Dyes, and Adsorption as the Preliminary Phase of Chemical Union

E. Wedekind and H. Rheinboldt

J. Chem. Soc., 1919, p. ii. 270,  
from Ber. chem., 1919, p. 1013

The hypothesis that, in heterogeneous systems, chemical action is preceded by the formation of an adsorption complex is confirmed by facts.

Crystalline Substances with Colloidal Properties. Basic Zirconium Sulfates, and Double Sulfates of Zirconium and the Alkali Metals

O. Hauser and H. Herzfeld

J. Chem. Soc., 1919, pp. ii. 290, 291

The author has isolated three basic zirconium sulfates, all definitely crystalline in the solid state while giving aqueous solutions possessing essentially colloidal properties. A similar behavior is also shown by several double zirconium-containing sulfates which were prepared.

Relationship between Odor and Chemical  
Constitution

T. H. Durrans

Chem. Abst., 1919, p. 1864

Results are given of a systematic inquiry into the various classes of substances that are composed only of either two or three of the elements carbon, hydrogen and oxygen.

## (B) Analytical Chemistry

Contributions to the Chemistry of Aluminium  
and Aluminium Alloys

J. G. A. Rhodin

Trans. Farad. Soc., 1919, p. 134

The author gives for the determination of aluminium in copper-zinc-aluminium alloys a new method which is fairly rapid and which has given consistent results during extended use. He also describes the formation and isolation of a new lower oxide of aluminium,  $Al_3O_4$ .

Estimation of Minute Amounts of Nitrates  
and Hydrogen Peroxide in Presence of Each Other

A. Quartaroli

Gazz. chim. ital., 1918, p. I. 102

This method is based on the oxidation of ferrous to ferric iron which is effected in acid solution by either nitrates or hydrogen peroxide, the formation of ferric iron

being rendered immediately obvious by the presence of a thiocyanate and in this way colorimetrically estimated. A preliminary brief boiling with carbamide and hydrochloric acid will destroy nitrites but not hydrogen peroxide. It is claimed that nitrites alone can be detected down to 0.5 part  $\text{HNO}_2$  in  $10^6$  and hydrogen peroxide down to 3 parts in  $10^6$ , and that with higher concentrations than these the estimation of both is approximately accurate.

#### Rapid Determination of Solubility

T. J. Ward

Analyst, 1919, p. 137

Dissolve substance for test in solvent at  $10\text{--}20^\circ\text{C}$ . above temperature of test. Cool to proper temperature, filter, draw off definite amount and evaporate and weigh.

### (C) Colloid Chemistry

#### Effect of Long Soaking on the Composition of Sole Leather

J. B. Churchill

J. Soc. Chem. Ind., 1919, p. 472 A.

A piece of sole leather recovered after 54 years' immersion in water was pliable and dark red in color, but when dried out became nearly black and very brittle. The dry leather contained 74.3% of hide substance, 11.7% of combined tannin and 1.79% of water-soluble matter. Long soaking had thus removed the greater portion of the combined tannin.

#### Water-Resistant Glues

F. L. Browne

Chem. Met. Eng., Aug. 1, 1919, p. 136

At present there are two types of these in use, one having casein and the other blood-albumin as a base. These glues are water-resistant in the sense that the amount of water the dry glue films will take up is limited and the water-saturated glue still has sufficient strength to hold the glued surfaces together.

#### Effect of Hydrogen-Ion

H. E. Patten and A. J. Johnson

##### Concentration on Liquefaction of Gelatin

J. Soc. Chem. Ind., 1919, p. 472 A.

Gelatin behaves as an aggregate of amino-acids acting amphotERICALLY. The setting of gelatin is influenced by the hydrogen-ion concentration.

#### The Quinone Tannage

W. Moeller

Chem. Abst., 1919, pp. 522, 1162

The author considers that only those quinones which can form colloidal aqueous solutions are capable of tanning. Ordinary quinone therefore does not give a true "quinone tannage", but, becoming converted into humins, can give rise to a (very strong) "humin tannage".

#### Freezing of Silica Acid Coagula and Problem of Hydrates of Silica. I and II

B. L. Vanzetti

Chem. Abst., 1919, p. 1663

Final composition depends on initial concentration of the gel and its age. Temperature of freezing or rate of drying has nothing to do with it.

- Soy-Bean as a Deflocculating and Decolorizing Agent S. M. Masee  
Chem. Abst., 1919, p. 1664,  
from Chem. Analyst, 1918, 27, p. 18

1% soy-bean extract followed by 1% Na Cl precipitates albuminous matter; blood corpuscles, waste sulfite liquors, tanning materials and dyes.

- Crystalline Substances with Colloidal Properties. Basic Zirconium Sulfates, and Double Sulfates of Zirconium and the Alkali Metals. (O. Hauser and H. Herzfeld) See 3 A.

- The Congo Dyes, and Adsorption as the Preliminary Phase of Chemical Union. (E. Wedekind and H. Rheinboldt) See 3 A.

- The Colors of Colloids. I-IV (W. D. Bancroft) See 2.

## (D) Organic Chemistry

- Reactions of Cellulose F. B. Seibert and J. E. Minor 1411  
Paper, Aug. 13, 1919, p. 15

A study of the degradation of cellulose as produced by beating and cutting, with and without bleach. As beating proceeds it is accompanied by hydration with secondary reactions which may be both of hydrolytic and oxidizing nature. The results of the secondary changes may be detected by the change of the copper number and by the grease-proof quality of parchment paper. Microphotographs and tables are given.

- Effect of Cellulose Hydration on Structure Sindall and Bacon 1411  
Paper, Sept. 3, 1919, p. 22

Hydration is an example of gel formation due to development of the colloidal conditions of cellulose. Reference is made to the value of hydration processes in the study of the maturation of cotton fibers, as illustrated by the discovery of "daily growth in the cell wall of cotton hairs" by L. Balls.

- Identifying Dirt in Paper D. M. McNeale 1412  
Paper, Aug. 20, 1919, p. 24

A list of some of the kinds of dirt occurring in paper and the methods used for detecting it.

- The Nitro Derivatives of H. Ryan and J. J. Tremm 1518  
Phenyl-beta-Naphthylamine  
J. Chem. Soc., 1919, p. i. 324

The use of the acetyl derivative of phenyl-beta-naphthylamine as a stabilizer for nitrocellulose has been proposed; the action of nitrous acid on this material has ac-

cordingly been studied. No action takes place in dry ether, but hydrolysis and nitration occur in moist ethereal solution, phenyl-beta-naphthylamine and a mono-nitro derivative being formed. In alcoholic solution two tri-nitro compounds are formed.

Measure of the Speed of Nitration of Phenols      A. Klemenc and E. Ekl  
Bull. soc. chim., 1919, 26, p. 182

Nitration is always accompanied by the formation of nitrous vapors. These vapors are catalysts and without them nitration does not occur. In ethereal solution the concentration of  $\text{HNO}_3$  should not exceed that of the phenols.

Method of Nitrating Phenols and      C. Ellis and A. A. Wells  
Similar Compounds

By treating a mixture of the substance to be nitrated and sulfuric acid with an acid solution of sodium nitrate. It is claimed that the presence of sodium hydrogen sulfate inhibits the formation of tarry products. (U. S. Patent 1309320)

Process of Regulating Catalysis      B. E. Eldred and G. Mersereau

By diluting the reacting gases with a suitable inert gas. Thus acetylene and hydrogen can be made to give good yields of ethylene by the nickel reduction method by mixing with 2-3 volumes of carbon dioxide or ethane. (U. S. Patent 1208777)

## 4. Technology and Research

World's Greatest Air-Nitrate Plant at Muscle Shoals, Alabama  
Chem. Abst., 1919, p. 1903

The output of the plant is 300 tons (10 carloads) of finished product (ammonium nitrate) per day.

Metallic Coatings for the Rust-Proofing of Iron and Steel  
J. Frank. Inst., Aug., 1919, p. 265

The methods of application of different metal coatings are discussed and it is concluded that as a protection against corrosion zinc is most useful although considerations such as freedom from toxic effects may lead to choice of other metals. Testing methods are described.

Heat Treatment of Steel. Application to the Treatment      A. Sauveur  
of Steel Used for Airplane Motors  
J. Frank. Inst., Aug., 1919, p. 189

Treatments are divided into three classes: (a) softening, (b) strengthening, (c) hardening. Specific instructions are given for each of these treatments applied to various kinds of steels.

**The Raw Materials of Photographic Plate and  
Paper Manufacture**

W. R. Innes

J. Soc. Chem. Ind., 1919, p. 273 T.

The author discusses briefly the effect of the war on the quality and price of photographic raw materials in Great Britain. Silver nitrate, bromides and gelatin of good quality were obtainable at increased prices, while difficulty was experienced with paper and glass.

**Corrosion Tests on Commercial Calcium Chloride**

P. Rudnick

(“Anti-Freeze”) Solutions Used in Automobiles

J. Ind. Eng. Chem., 1919, p. 668

Calcium chloride solution is unsuitable in automobiles where aluminium or copper comes in contact with iron or steel.

**Relation of Microstructure to Phase**

L. R. Seidell and G. J. Horvitz

Changes in Heat-Treated Aluminium Bronzes

Chem. Met. Eng., Aug. 15, 1919, p. 179

Description of the influence of heat treatment on the microstructure and other physical properties of copper-aluminium bronze of 90% copper and 10% aluminium. Adaptability of this bronze for bearing and corrosion-resistant metal.

**Production of Glycerin**

J. R. Goff, W. V. Linder and G. F. Beyer

from Sugar or Molasses by Fermentation

J. Ind. Chem. Eng., 1919, p. 842

**Synthetic Production of Acetic Acid and Acetone**

H. W. Matheson

from Calcium Carbide at the Works of the

Canadian Electro Products Company

Canadian Chem. J., 1919, p. 258

**Rupture of Cast Iron in Contact with “Mixed Acid”**

A. C. Cumming

J. Soc. Chem. Ind., 1919, p. 31 T.

Describes accidents due to bursting of two large acid eggs. The metal was porous and the acid penetrated to a considerable distance and formed salt crystals inside the walls.

**Recent Developments in the Fermentation Industries**

J. Soc. Chem. Ind., 1919, p. 271 T.

Three papers on the production of acetone by fermentation of corn or other starch-containing substances by the Dr. Weizmann process.

**Manufacture of Glycerin by Fermentation in Germany during the War**

J. Soc. Chem. Ind., 1919, p. 286 T.

Fermentation of sugar or molasses in alkaline solution containing ammonium salts.

**The Setting of Cement and Plasters**

Trans. Farad. Soc., Jan., 1919, p. 1

General discussion on sand, cinder and slag concretes.

**Prices of Chemicals during the War**

F. E. Breithut

Chem. Met. Eng., Aug. 15, 1919, p. 174

Brief analysis, with graphs, of 57 bulletins now in the press covering investigations of the War Industries Board.

**Japanese Porcelains from the Chemical Point of View**

Chem. Met. Eng., Aug. 15, 1919, p. 183

**Commercial Synthesis of Organic Compounds from Acetylene**

M. J. Marshall

Canadian Chem. J., 1919, p. 254

**The British Photographic Research Association**

R. E. Slade

B. J., 1919, p. 458

Extracts from the report of the Director. The Association is attacking photographic problems by the investigation of fundamental principles. Experiments have been made on gelatin and on photographic emulsions. Dr. Slade has been successful in staining wood black or gray right through, the black wood being used by manufacturers of cameras and optical instruments. A patent has been filed for the process. Two scientific communications have already been published. The Director lays stress on the importance of free publication of work.

**A Photographic Research Association**

Photo Era, Aug., 1919, p. 87

A editorial suggests that the United States Government should follow the example of the British Government and establish a Department of Scientific and Industrial Research.

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## Patent Abstracts

(NOTE—The symbol appearing to the right and above each patent abstract is the index symbol according to the classification of photography in use at the Laboratory.)

### U. S. Patents

1308709

A. Hamburger K/43

Process of Coloring Motion Picture Films. A double coated film has pictures printed in registry on opposite sides and these are developed and simultaneously dyed by passing between bands containing coloring matter. They may be bleached before the dyeing process, or a solution is given for simultaneously bleaching and pigmenting.

1312694

F. Judge K2114

A Color Camera. The sensitive plate is carried on a rotatable disk and different records are taken by rotating the disk to place different areas in exposure position.

1312088

F. Twyman and H. Workman K8117

A Camera for the production of color motion picture films. The entering beam of light is split by means of prisms into two parts and simultaneous pictures are taken. The lens elements may be adjusted so as to correct for lack of proper superposition when projected.

1309992

H. Workman K32

A Motion Picture Projector intended particularly for multi-color work. The light from the condenser passes through prisms, by which it is deflected through a plurality of gates, where lenticular prisms redirect and correct the beam through the projecting prism. By varying the size of the prisms different proportions of light may be sent through the different gates.

1307385

H. F. Waite X421

X-Ray Tube Holder and Shield.—A design of protective shield for X-ray tube holder for adjusting tube in any desired position.

1307645

H. F. Waite X431

X-Ray Tube Current Measuring System. A method of locating the milliammeter in a convenient place without danger to the operator. The milliammeter is actuated by a small step-down transformer, which is grounded and takes current from a portion of the high-potential transformer. The milliammeter is calibrated to give current through the X-ray tube.

1309183

J. M. Cochrane 045

A Stereopticon Slide in which a positive and a glass-protecting element are bound in an aluminium frame, there being an outer cardboard frame.

1309798

W. F. Folmer. Assigned to E. K. Co. 083—219

A Camera intended for Airplane Work. It is resiliently supported in the body of an airplane. It is automatic in operation, the power being preferably supplied from a wind motor under control of the pilot, and in connection with the motor is provided an exhaustor for producing a vacuum, whereby the film is held flat during exposure.

1311447

L. J. R. Holst and N. Pedersen. 083—219  
Assigned to A. Brock, Jr.

An Automatic Roll Film Camera designed particularly for aeronautical use. There are two spring motors, one being a timing motor which releases periodically the driving motor. With each actuation a capping shutter is opened, the focal plane shutter operated, the capping shutter closed, the focal plane shutter rewound and the film wound upon the receiving reel.

1306963 and 1308946 J. Koetschet and H. Bendet 1511

Process for manufacture of acetic anhydride by heating ethylidene diacetate under reduced pressure with a catalyst such as sulfuric acid. Paraldehyde is recovered as a by-product. The ethylidene diacetate is produced by heating acetylene with a solution of mercuric acetate in glacial acetic acid containing a catalyst such as an aromatic or aliphatic sulfonic acid.

1308173 H. Dreyfus 1511

Manufacture of Acetic Acid from Acetaldehyde. The aldehyde is oxidized by atomizing it in an atmosphere of oxygen, with or without a catalyst such as ferric oxide or ferric acetate.

1308803 G. Mersereau 1516

Solvent for cellulose esters consisting of a mixture of methyl or ethyl alcohol and a mixture of products obtained by treating cracked petroleum with chlorine.

1308898 J. E. Crane 1517

Process of Purifying Camphor. On heating crude camphor in a closed vessel at 150-280°C. the camphor oil is converted into substances of volatility widely different from that of camphor.

1312122 A. L. Jones 2152

A Roll Film Camera in which the film is wound up by the unfolding of the bed of the camera. The film might also be turned in the usual manner so that it is not necessary to close and open the camera between successive exposures.

1309747 F. E. Russell 2153

A Camera with means for light printing inscriptions upon the sensitive element of the type in which the inscription is written upon a slate thrust in front of the sensitive element from the side and light-printed through a separate light-admitting door.

1311416 N. Pederson. Assigned to A. Brock, Jr. 219—083

An Automatic Plate Camera in which plates are taken from one magazine, placed in exposure position and automatically placed in a second magazine. The camera is especially devised for aeronautical use.

1313190 J. L. Boyle 221

A Combined Talking Machine and Stereopticon intended for use as an advertizing or entertaining device, the advertizements or illustrations being timed in accordance with the speech, lecture or song repeated.

1313214 J. L. Boyle 221

A Combined Stereopticon and Talking Machine by means of which a lecture may be delivered and the slides exhibited at the proper time automatically.

- 1310052 P. Boucard and L. Lemaire 222

An Enlarging Camera in which the lens and sensitive element are in a dark box, in front of which is a light, a condenser and a negative-holding means, all mounted on a common support.

- 1309358 J. S. Graves 2235

An Automatically Acting Magazine Stereopticon Machine.

- 1312050 G. W. Romer 256

A Photographic Print Washer consisting of a series of pans, each having an inner annular perforated flange and an outer flange and an obliquely extending spout, through which water is discharged from one tray to another.

- 1312674 M. W. Beyer 2614—043

A Camera Support upon which a movable plate is swung, the camera being upon this plate. Pictures taken from two positions of the plate constitute a stereoscopic pair.

- 1312675 M. W. Beyer 2614—043

A Camera Support having shiftable means so that a single camera may be placed in two positions which are on the arc of a circle having the subject photographed as its center. The two views thus taken constitute a stereoscopic pair.

- 1312885 M. J. Barnett 2626

A Device for actuating camera shutters after a predetermined time. It comprises a cylinder containing a spring-pressed piston, the time of operation being controlled by the adjustment of the needle valve through which the air escapes from the cylinder.

- 1309847 C. W. Frederick and F. E. Altman. 2634  
Assigned to E. K. Co.

A Photographic Objective having outer positive and inner negative lenses all air-spaced. The positives are identical and the negatives have all four radii of curvature the same, but are of different glass.

- 1312283 E. H. W. Stahlhuth 264

A Camera Finder pivotally hung and weighted and having indicating means so that the angle of inclination of the camera may be noted.

- 1312052 O. Sartorius, J. F. Gandara and B. Colonna 2653

Photographic Film for use in cameras consisting of sensitized and unsensitized portions to permit of focusing between exposures.

- 1311676 A. Beck. Assigned  $\frac{1}{2}$  to H. S. Simms 2655—2153

A Film Pack in which especial provision is made for the light-printing of legends upon the film after it has been moved from exposure to storage position.

1310255 G. A. Smith 2682

An Exposure Meter in which the light admitted through an adjustable diaphragm is compared in intensity with a constant source as a luminous disk.

1310256 G. A. Smith 2682

An Exposure Meter in which light admitted through an opening passes through a photometric wedge and is compared with a standard of self-luminous material.

1308385 A. Weiss. Assigned  $\frac{1}{2}$  to E. H. Beighlee 287

A Means for Lubricating Films which consists of pressing sticks of lubricating material against the edges of the film, pressure being exerted by weight. The film passes from this machine into the motion picture projecting apparatus.

1311008 H. L. Quick 319—068

A Motion Picture Camera in which successive exposures are taken through different parts of the lens by means of a rotating disk shutter having differently placed annular slots. The resultant pictures are said to give a stereoscopic effect.

1311238 J. A. LeRoy 3201

A Film Advancing Means for Motion Picture Machines of the type in which a rotating gear segment periodically engages the film.

Re. 14694 C. Ubelmesser. 3202

Assigned to Cru Patents Corporation

A Film Guide Control for Motion Picture Machines. A movable guide roller is actuated by a lever controlled by the tension of the film.

1312722 E. W. Clark. Assigned to Photo Motion Co. 3203

A Shutter for Motion Picture Projectors having transparent, translucent and opaque divisions, which are in turn divided into a plurality of segments.

1310959 J. G. R. O'Hara. 3207

Assigned to Educational Motion Picture Machine & Film Co.

An adjustable Lamp for Motion Picture Projecting Machines.

1311363 H. E. Watson. 3209

Assigned  $\frac{1}{2}$  to F. B. Thompson

A Safety Device for Motion Picture Machines. If the film breaks, a contact is established which causes the operation of the magnet to break the main motor circuit and stop the machine and put out the light.

1311073 C. F. Jenkins. 3209

Assigned to Graphoscope Co.

A Safety Device for Motion Picture Machines in which a resilient portion in the rod between the safety shutter and the weight controlling it permits of manually holding the shutter open for focusing or other purposes.

1309990 C. Ubelmesser. 321

Assigned to Cru Patents Corporation

A Motion Picture Machine in which the projecting portion is intermittently driven and having a constantly driven takeup reel. The speed of the constantly driven reel is governed by the size of the loop formed in the film.

1309665 O. R. Taka 322

Motion Picture Apparatus of the continuously moving film type. The optical system comprises a series of moving reflecting prisms.

1309672 W. B. Wescott. 322

Assigned by Mesne Assignments to Technicolor Motion  
Picture Corporation

A Method and Apparatus for Motion Picture Projection from continuously moving film. Movable reflecting prisms are used to maintain the image from the moving film constant in position. As one picture fades from the screen, another one simultaneously is brought upon the screen, so that there is no period of darkness, this serving to eliminate flicker. Optical means are provided for maintaining the size of the projected image constant.

1309673 W. B. Wescott. 322

Assigned by Mesne Assignments to Technicolor Motion  
Picture Corporation

Method and Means for Motion Picture Projection from continuously moving film. A revolving toroidal mirror behind the film serves to maintain the projection of the moving picture in a constant position. A movable reflector in the optical system is also used. One picture is thrown upon the screen as the other one leaves it, permitting no intervening period of darkness and thus avoiding flicker.

1312103 C. J. Coleman 323

A Combined Motion Picture Machine and Phonographic Apparatus. They are both placed behind the screen and operated by the same mechanical means. Special means is provided for preventing the transmission of vibration from one machine to the other.

1310211 A. D. Philpot. 325

Assigned to Tomalpa Mfg. Co.

A Portable Motion Picture Machine in which special means is provided for ventilating the light box. There is a special clutch arrangement between the reels so that they may be driven in either direction.

1310337 C. M. Hepworth 34

A Printer for Motion Picture Film in which apertures or notches in the master film control the period of exposure, so that the proper density of the copies may be obtained.

- 1312289 W. Wenderhold. 34  
Assigned to Cru Patents Corporation

A Printing Apparatus for Motion Picture Film in which the density of the negative controls by means of a selenium cell a shutter so as to insure uniform density in the positive.

- 1310776 C. E. Akeley. 364  
Assigned to Akeley Camera Co.

A Finder for Motion Picture Cameras in which an eye-piece is flexibly connected to a finder lens so that the user may move the camera around at will but hold the eye-piece fairly steady. A system of reflecting prisms is used.

- 1310215 E. Schneider (deceased). 386  
S. A. Schneider, Administratrix

Apparatus for Mending Film. The broken ends of the film are placed in proper registry and cut so as to have properly aligned smooth meeting edges and the fastening device applied.

- 1310385 G. A. Betts 0733

Method of producing a number of engravings of the same size by making them slightly larger than required and then stripping these on to a support which has previously been ruled vertically and horizontally, to show position in which negatives are to be placed.

- 1309398 F. Douthitt 07332

A method of ascertaining camera stops, for obtaining correct exposures in half-tone negative making. The device consists of a spring tape which indicates the size of the stop according to the camera extension. (The principle is correct, and well known, and the use of a spring tape to indicate the camera extension has also been published many years ago.—Abstractor.)

## British Patents

- 127308 D. F. Comstock K8117

Optical Systems. A light-dividing means to be placed behind a photographic objective and comprising a system of prisms having a partly transparent and partly reflecting surface has the dividing surface formed with distinct areas of reflection and of transmission arranged and adapted to prevent the formation of cumulative diffraction spectra. The joint boundaries may be in a number of different distinct directions and the two sets of areas may have their respective members different in shape or size, or both. The areas may be polygonal and irregularly distributed with respect to each other.

- 128337 A. J. Agnew and F. F. Renwick G5

Photographic Development. Gelatin-surfaced photographic materials prior to treatment with a developer or other aqueous solution, are treated in a bath contain-

ing formalin, paraformaldehyde, or a compound from which formaldehyde is readily generated, and a salt which tends to raise the melting-point of a gelatin jelly and to retard the swelling of dry gelatin when placed in water.

125490

E. E. Burnett X13

**Negative Plate Substitutes for Radio-Photography.** A negative plate substitute for use in radio-photography is prepared by coating paper with calcium tungstate emulsified in gelatin or other suitable medium, and then with a sensitive photographic emulsion. (J. Soc. Chem. Ind., 1919, p. 389A.)

127683

H. Soar 048

**Ornamenting Photography.** Chromatic effects are produced on layers of solutions held on suitable supports, such as glass plates, by the action of light and atmosphere; such effects are permanent when the solution dries and may be used for ornamenting, photographic or optical purposes. Various solutions for the purpose are set forth in the Specification, such as cupro-sulfate of ammonia combined with potassium dichromate, and silver or nickel sulfate dissolved in a solution of ammonia. A suitable solution may also be produced by the action of hydrofluoric acid upon glass under humid conditions. Haloid salts, quinine sulfate, barium salts, dyes, etc., may be added to the solutions to vary the effects obtained. The solutions may also be exposed to light through color screens to vary the effects, and to light projected by lenses or mirrors to produce colored photographs of objects.

128022

D. A. English 083

**Photography.** Stereoscopic photographs from airplanes are obtained by making two or more exposures on a separate portion of the same plate at a predetermined time interval. A roller blind shutter with two exposure slits is used in conjunction with a mechanism for temporarily arresting the shutter.

127381

C. M. Williamson 083—219

**Cameras.** Relates to motor-driven cameras in which the motor drives the receiving-spool through gearing and thus moves the film across the exposure aperture and consists in the provision on the shutter of an engaging member adapted to release a catch from a notch in a disk rotated by the gearing and carrying a roll serving to control the feeding of the film from the gate to the receiving-spool, in the particular construction of the shutter and its operating mechanism, and in the starting and stopping mechanism for the spring motor. The invention is described with reference to a camera for training marksmanship on aircraft.

128593

A. Brock 083—219

**Photography.** A camera for taking a series of overlapping photographs from aircraft is suspended by yielding damping-means so that its axis is maintained in the same direction in all positions of the airplane, and counter-balancing means are provided to maintain the position of center of gravity when the film is wound from one spool to the other.

128609

A. Brock 083—219

**Photography.** A camera for taking series of photographs from aircraft has an intermittently-operating motor for operating the film-feeding mechanism and the

shutter, and timing mechanism for starting the motor at regular intervals. The timing-mechanism is regulated by means operable from the pilot's seat.

128626

A. G. Pickard and F. Slinger 083—219

Cameras. A photographic camera is constructed so as to have an external contour and appearance as nearly as practicable the same as a Lewis or other machine gun, and so as to require all the movements necessary for machine gun operation to obtain a satisfactory photograph; practice with the camera is thus equivalent to gun drill or practice.

128637

H. G. C. Fairweather 083—219

Photography. Relates to an automatic roll-film camera for taking pictures of successive portions of an object or landscape from a moving vehicle, such as an airplane.

127953

T. P. Middleton 1375—/84

Photography. For the production of a pigment and similar prints from a silver image, a pigmented or dyed silver emulsion is very thinly coated onto a support which allows the silver image to be developed and fixed on the original support. After washing, transfer is effected to a support (temporary or final), and the film is allowed to dry prior to the removal of the original support and subsequent bleaching treatment. Supports are used which allow dry-stripping, or in which the image film is released by alcohol or a suitable solvent; but soaking in hot or cold water is not used. For the support baryta paper is coated with a solution of wax or of wax and rubber in xylene, and, when dry, is recoated with a solution of gum sandarac in alcohol. A developer, such as amidol or glycine, is used which has little or no tanning action on the gelatin, and a slightly acid fixing-bath is used which includes boric acid. The print is transferred to an ordinary piece of single transfer paper as in carbon printing, and, when dry, the original support is stripped. For double transfer, a temporary support is prepared with a solution of caoutchouc, gum elemi and gum dammar in benzene. The transferred image is treated with a bleaching-solution containing chromic acid, copper sulfate, and potassium bromide, and afterwards placed in warm water and developed as in carbon printing. A soup of fine boxwood or sawdust may be used as in the Artigue process. The silver bromide left may be removed or redeveloped. The process may be modified to produce clear gelatin images for color printing, and a dye or pigment used which washes out during subsequent treatment.

127558

Soc. d'Optique et de Mecanique de Haute Precision 2105

Cameras. One or both of the usual slideways along which the dark slide is inserted is replaced by a bar spring hinged to the body so that the dark-slide is secured by a snapping movement. The slideways may be secured by flexible strips fixed to the body and retracted by a central lever let into the top of the camera.

128385

J. W. Harris 3201

Cinematographs. The film gate is hinged and is oscillated by a rotating cam and a returning spring. On each oscillation of the gate the film is stepped through the gate. The film and gate are steadied by the circular portion of the cam. The film passes over a centring roller carried by the pivoted bar. Alternatively, the gate may be reciprocated laterally to and from the lens to obtain the feed movement.

127409 Newton and Wright 3203

**Cameras.** In shutters having two oppositely-moving blades geared together, and a blade-actuating member controlled by a releasing-lever, the blade-actuating member is pivoted, has an arm which directly engages a projection on one of the blades to separate them, and has a spring directly acting upon it to effect its operative movement.

128416 J. E. Ellis and H. C. Austin 3203

**Cinematograph Shutters.** Cinematograph projector shutters are formed, at the part covering the gate during the time of movement of the film, of a material which disperses the light without very materially cutting any off; flicker blades may be dispensed with.

127569 J. L. Pech 324

**Optical Projection-Apparatus.** A projection screen giving relief effects has a curved surface, the form of the curve and the curvature depending upon the throw of the picture and the position and distance of the spectators. The screen may comprise a fabric stretched upon a frame.

127949 F. B. Dehn 386

**Splicing Ends of Cinematograph Films.** Apparatus for use in splicing the ends of strips of cinematograph film consists of two clamps in which the ends of the strips are secured; the clamps are arranged side by side and one of them is movable in relation to the other whereby the ends of the strips are sheared and brought together, one overlapping the other.

## German Patents

302833 F. Beckers C13

**Matt Surface of Emulsions.** For obtaining a matt surface, cellulose, which may be dyed, is added to the emulsion. The cellulose may be obtained by a chemical or mechanical method and may vary in grain from the finest dust up to any size.

310445 B. Ehrenberg J81

**Platinum Toning of Printing-Out Paper.** A deep print is made, and is bleached in a 15% salt solution. It is then placed in a preliminary bath of ammonia, or an alkaline ammonium salt, toned in a gold bath, and finally fixed in a concentrated sodium thiosulfate bath (at least 15%) until the blue and red tone of the gold is destroyed. A pure platinum tone, of great brilliance, even with thin negatives, is thus obtained without the use of platinum. The best results are attained by using a buff-colored paper ("chamoiscelloidin papier") as otherwise the ground color of the paper interferes somewhat with the purity of the platinum tone. (J. Soc. Chem. Ind., 1919, p. 389 A.)

309447 Graphikus-Ges. J84

**By successive application of gold and selenium toning baths so that the metallic silver in the print is almost completely replaced by gold and red selenium, a tone**

is produced equal to that previously obtained only by platinum toning or a combined gold-platinum toning, and in permanency the prints are superior to those obtained by the latter processes. (J. Soc. Chem. Ind., 1919, p. 339 A.)

290872

H. Arnold and M. Levy-Dorn X116

Process for preparing Photographic Plates Especially Sensitive to X-Rays and Rays from Radio-Active Substances. Substances having strong absorption for such rays, e. g., thoria, are added to the emulsion in colloidal subdivision, either as solid or as solution.

302943

P. Dürr 2659

Process and Device for manipulating plates and films without a darkroom, by developing them in the plate-holder.

300390

P. M. R. Roth 0649—387

Process for Cleaning Oily Films. (1) Process for cleaning films characterized by the fact that the oily film is tightly wound on to a drum or spindle with a strip of blotting paper and left there for some time, until the blotting paper has completely absorbed the oil from the film. (2) Device for carrying out the process according to claim 1, characterized by the fact that the two rigidly connected supports each carry two braced film spools two of which can be screwed on to the spindle and connected with each other by belts or chains. (Phot. Korr., 1918, p. 76).

309376

J. Rieder 0711

The surface to be etched is covered with a sensitized film of caoutchouc and asphalt, exposed beneath a negative, developed with acetone or a similar substance, dusted over, either at once or after a light etching, with a powdered low-melting resin, and gently warmed until the powder melts. The surface may then be deeply etched by the usual means; the resin is firmly held on the exposed and developed portions and protects these from corrosion. (J. Soc. Chem. Ind., 1919, p. 389 A.)

## Swedish Patent

43464

K. L. F. Friedmann-Bofors B13—1412

Water-Proofing of Card-Board, Paper, etc. The ammonia soap of resin or a high molecular weight fatty acid, when dried at an ordinary temperature or heated, loses its ammonia and leaves the resin or fatty acid behind. Paper containing ammonia soap need therefore only be passed between drying rollers. If one wishes to use a fat or wax which is difficultly-soluble or insoluble in alkali, as, for example, japan wax, this should be emulsified in the solution of ammonia soap, and the emulsion used for soaking the materials, which are then dried. (Phot. Korr., 1918, p. 155).

Monthly  
**ABSTRACT**  
Bulletin



November, 1919

Issued by the Research Laboratory  
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Rochester, New York



*J. F. Currier,  
Belmont*

# Monthly Abstract Bulletin

Vd. 5, No. 11

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# 1. Photography

(NOTE—The symbol appearing to the right of the title and above each abstract is the index symbol according to the classification in use at the Laboratory.)

- Further Investigations on the Figures Produced U. Yoshida 012  
on Photographic Plates by Electric Discharges  
Chem. Abst., 1919, p. 1791

The author suggests, in explanation of a new phenomenon which he has observed and describes, that a strong electric field applied to a photographic film affects its sensitiveness to light.

- Cause of the Sensitiveness of Chemical J. Plotnikow 012  
Compounds to Light  
J. Chem. Soc., 1919, p. ii. 311,  
from Chem.-Zeit., 1919, p. 337

This is a theoretical paper in which it is shown that photochemical decompositions of organic compounds take place according to the schemes: (i) acids,  $R.COOH + R.H + CO_2$ ; (ii) aldehydes,  $R.CO.H + R.H + CO$ ; (iii) alcohols,  $R.CH_2OH + R.H + CO + H_2$ ; (iv) ketones,  $R.CO.R' + R.R' + CO$ ; (v) diazo-compounds,  $R.N_2.R' + R.R' + N_2$ . In these changes, energy may be either absorbed or evolved.

- Duplicate Negatives on Bichromated Lüppo-Cramer 014  
Dry Plates  
Phot. Rund., 1916, p. 55

It was shown that, according to the conditions, reversal of the image can be brought about by solarization, tanning, or solarization and tanning.

- Intensity or Intermittency Scales for A. Odencrants 014  
Sensitometric Purposes  
J. Soc. Chem. Ind., 1919, p. 601A.,  
from Zeits. wiss. Phot., 1919, 18, p. 209

Historical summary of sensitometric methods, with a statement of the objections to use of the sector wheel instruments. The author advocates the use of a Goldberg neutral tint wedge for the purpose of exposing sensitometric strips.

- Intensity Weakening for Development A. Odencrants 014  
Papers  
J. Soc. Chem. Ind., 1919, p. 601A.,  
from Zeits. wiss. Phot., 1919, 18, p. 220

The paper consists of a report of work done in the determination of Schwarzschild's constant for developing-out papers. He concludes that the value depends upon such factors as the hardness of the paper, constitution of developer, time of development and wave-length of exposing radiation.

- The Fundamental Law for                      A. W. Porter and R. E. Slade      015  
the True Photographic Rendering of Contrast  
Phil. Mag., July, 1919, p. 187

The authors develop an equation which gives the relationship between the characteristic curves of the negative and positive necessary for the correct reproduction of tone values. They show for a negative developed to high contrast that a positive material of low contrast must be used to give reproduction of tone, also that by proper choice of positive material true reproduction of tone may be obtained by use of the underexposure portion of the negative.

- Influence of Temperature on Photographic                      G. v. Dalezki      015  
Plates

J. Soc. Chem. Ind., 1919, p. 601A.,  
from Zeits. wiss. Phot., 1919, 18, p. 233

Determination of the temperature-coefficient of sensibility for ordinary and pinachrome-sensitized plates for the temperature range, 7° to 64° C. A value of 1.06 was obtained for the ordinary plates exposed to white light. The sensitized plates exposed to blue light gave 1.04 and when exposed to green 1.08.

- On Image and Object Distance                      A. Kleinstück      019  
and Focal-Length

Phot. Rund., 1916, p. 85

The mathematical relations between these are developed in a simple manner.

- The German Color Plate                      R. Blochmann      K/33  
Phot. Rund., 1916, p. 74

The author specifies how development should be carried out in order to prevent the emulsion from coming away from the screen in the Christensen-Agfa process. The results are not satisfactory.

- The New Agfa Color Screen Plate                      K/33  
Phot. Rund., 1916, p. 57

The Christensen patents underlie the process. The manufacture of the screen proceeds accordingly in the following steps:- (1) preparation of the three dyed glue solutions; (2) separate emulsification of these three solutions in a suitable medium (turpentine, benzene, etc.); (3) treatment with a substance (e. g., casein, gum dammar and other resin acids) which renders the individual suspended globules insoluble; (4) mixing of the three emulsions; (5) distribution of these on the glass plate; and (6) drying and varnishing of the screen.

- Opinions and Experiments on the New Agfa                      P. Thieme      K/33  
Color Plate

Phot. Rund., 1916, p. 61

This is an interesting discussion, in which the author compares the respective advantages and disadvantages of the Christensen and the Lumière color plate.

A Review of Color Photography. II      H. E. Rendall      K/42—K/44  
B. J. Col. Sup., 1919, p. 33

The present section of this article deals with paper printing processes, those considered including the carbon process, ozobrome, imbibition, bromoil, transfer and bleach-out.

Making Cold Process Stripping Paper and      A. J. Jarman      A1875  
Plates for Developing or Printing-  
Out by Hand or Machine  
Phot. J. Amer., 1919, p. 449

First installment of instructions for making a stripping paper deals with the subbing of the paper stock. Formulae are given.

Milk-Silver Emulsions      B. Maklakoff      C137  
J. Soc. Chem. Ind., 1919, p. 601A.,  
from Zeits. wiss. Phot., 1919, 18, p. 240

An emulsion suitable for the preparation of sensitized paper is obtained by adding a solution of 2.3 grammes of silver nitrate and 0.3 gramme of citric acid in 10 cc. of water, treated with ammonia slightly in excess of the quantity required to redissolve the precipitate first formed, to a solution of 2 grammes of potassium bromide and 0.3 gramme of sodium chloride in 40 cc. of cream, raised nearly to boiling point. The emulsion is kept in hot water for some hours, filtered, and then coated on the paper. After drying, the paper is washed with distilled water and again dried.

The Care of Negatives      P. Hanneke      L9  
Phot. Rund., 1916, p. 53

A miscellany of recommendations of how to render negatives durable.

The Belitski Reducer for Negatives and      H. Baker      H1—1656  
Bromides  
B. J., 1919, p. 539

Recommends this reducer, which is made by dissolving 22 grains of potassium ferric oxalate and 18 grains of sodium sulfite (crystals) in 1 oz. of water. When dissolved a blood-red solution is formed. On the addition of a few crystals of oxalic acid the red solution turns green as the acid dissolves. As soon as the whole solution is green it is poured off the crystals and a solution containing 120 grains of hypo in  $\frac{1}{2}$  oz. of water is added to each ounce of the reducer, which is then ready for use. It is not necessary to wash negatives after fixing unless they have been developed with pyro and the fixing bath is discolored. The solution keeps indefinitely in a dark room, though it is sensitive to light.

Reducing P. O. P Prints      H1—1656  
B. J., 1919, p. 526

The persulfate reducer is recommended or, in place of it, a mixture of ferri-cyanide and sulfocyanide.

- Pictures on P. O. P. by Brief Exposure E. Valenta J3—/68  
followed by Development

Phot. Rund., 1916, p. 57, from Phot. Korr., Dec., 1915

The following stock solution is made up:—

Water.....	1 liter
Citric acid.....	17 grammes
Metol .....	4 “
Hydroquinone.....	6 “

This solution is diluted with from 20 to 30 volumes of water for development. As soon as the image has sufficient strength, development is arrested by transferring the print to a weak (1-2%) salt solution; it is then toned and fixed in the usual way.

- Adjusting Loose Gelatin on Negative L3  
Phot. J. Amer., 1919, p. 486

To repair a tear in the gelatin film the negative should be soaked in a mixture of equal parts denatured alcohol and water, and the loose piece of film placed in position with the aid of a spotting brush. Full strength alcohol causes too great a shrinkage.

- Aids to Definition in X-Ray Work B. T. Lang X417  
Arch. Rad. Electrotherapy, Aug., 1919, p. 69

Shows the advantage of cone type of diaphragm over the flat disk type for reducing secondary radiation. It is stated that contrast in radiography is increased by filtering out soft secondary radiation from the body with aluminium.

- A Biological Basis for C. R. C. Lyster and S. Russ X421  
Protection against X-Rays  
J. Roent. Soc., July, 1918, p. 87

It is recommended the X-ray operator carry a small photographic plate in his pocket to register his exposure to X-rays. This is developed with a test plate which has received a standard exposure. Data are given to show that hard rays have slightly less effect on the photographic plate than soft rays.

- A Practical Method for Testing the R. T. Morrison X424  
Efficiency of an Intensifying Screen  
Amer. J. Roent., Sept., 1919, p. 458

A portion of the film in contact with the intensifying screen is given a unit exposure; another portion of the film, insulated from the screen by black paper, is given various multiples of this unit exposure. The multiple giving the same density as the exposure with the screen is the intensifying factor.

- A New Goggle for Use in Fluoroscopy I. S. Trostler X425  
Arch. Rad. Electrotherapy, July, 1919, p. 60

Lead glass goggles are fitted with auxiliary smoked glasses to retain the dark adaptation of the eye when in a lighted room. The smoked glasses are turned on hinges away from the eye when the room is darkened.

- Some Experiments on Photographic Measurements of Roentgen Ray Dosage L. P. Larkin X484  
 Amer. J. Roent., Sept., 1919, p. 448

Regular carbon velox is recommended for this purpose. The effects of different types of X-ray apparatus upon this paper were studied, together with the effects of time of development, temperature, and concentration of developer.

- Practicus in the Studio—Miniatures 031  
 B. J., 1919, p. 550

This deals with the preparation of miniatures—not only those hand-painted on ivory but also the cheaper variety of celluloid portraits. The advantages of Transerotype paper are pointed out as enabling a bromide print to be transferred from its original support to ivory, celluloid or porcelain.

- Practicus in the Studio—Blinds and Curtains 0311  
 B. J., 1919, p. 530

Valuable suggestions with regard to construction.

- On Suitably Arranging an Equipment Wurm-Reithmayer 0313  
 for Portraiture  
 Phot. Rund., 1916, p. 66

The author gives advice in regard to home portraiture.

- Natural Backgrounds 0314—272  
 B. J., 1919, p. 525

Editorial account of methods of introducing natural backgrounds into portrait negatives which anticipate the method suggested by Mr. Elwin Neame.

- Wide-Angle Photography M. Jaffé 051  
 Phot. Korr., 1918, pp. 124, 158

This article deals (1) with the photography of stationary objects, and (2) with that of moving objects. Group (1) comprises:—(a) exposures with an extreme angle of view of about 90°, (b) exposures with an angle of between 90° and 140° consisting of two supplementary negatives, and (c) exposures the various parts (three or more) of which are made from different points of view.

- Night Photography. III R. Dykes 0582  
 B. J., 1919, p. 516

Continuation of series, this section being devoted to the finishing of the negatives and printing.

- Night Photography. IV R. Dykes 0582—0631  
 B. J., 1919, p. 528

Methods of Obtaining Cinematograph Night Effects. This is done by making positives from ordinary plate negatives, which are then copied on to the cinematograph film when illuminated by transmitted light. This method is useful for introducing any subject of which a still is required in a cinematograph film.

- Mapping from Air Photography. II M. N. MacLeod 084  
B. J., 1919, p. 518

Contains description of method of plotting points from air photographs including the method used by the Germans for the determination of points from obliques, the Germans having made much more use of oblique photographs than the Allies. A discussion is also given of the determination of contour lines from airplane photographs. The chief improvements to be aimed at in airplane photography are stated to be mechanical devices for determining the amount of tilt of the camera and some means of determining the scale of a photograph with fair accuracy without the use of an elaborate frame-work of fixed points on the ground. The author concludes that very little further development is required to give us the power not only of preparing complete and accurate large-scale maps of civilized regions but also of obtaining reasonably accurate maps of unexplored regions at present inaccessible to any one but the explorer. In civilized countries it is obvious that air survey will give the minimum inconvenience to the occupiers of the ground, though for accurate work we cannot dispense with the surveyor altogether, and in hilly country, until some satisfactory form of stereo-plotter can be devised, the air photograph will not help us very much. When such an instrument is made, however, it should be possible to map, very cheaply indeed, steep, hilly regions at present difficult to survey.

- Application of Dicyanine to the Photography of Stellar Spectra P. W. Merrill 0962  
Bull. Bur. Stand., July 12, 1919, p. 487

Working with the 24-inch reflecting telescope and objective prisms at the Harvard Observatory, the author has obtained important results in stellar spectroscopy by the use of photographic plates dyed with *dicyanine* and dicyanine A. Some of his spectra reach to wave-length 8700 A. U. A particularly conspicuous feature of the red and infra-red spectra, brought out by his spectrograms of the red stars, is the conspicuousness of the bands due to titanium oxide.

- A Plea for the Ozobrome Process W. H. Moffitt /84  
B. J., 1919, p. 531

A review from the Australasian Photo Review of an article giving very complete directions for the working of the Ozobrome process.

- A New Color Transparency Process A. E. Bawtree /86  
for Illustrating Scientific Lectures  
Proc. Phys. Soc., Aug., 1919, p. 235

The image is produced in a thin colloid film upon bare glass. Several images in different colors may be superimposed. The process has applications other than the preparation of lantern slides.

- The Preparation of Ferric Oxalate E. J. Wall 15311  
Phot. J. Amer., 1919, p. 445

Sulfite and Alkali

163

B. J., 1919, p. 541

The preservative action of sulfite is considerably reduced if it is mixed with alkali such as sodium carbonate, the sulfite being destroyed with lapse of time.

The Making of Process Inks

07009

Amer. Printer, Sept. 20, 1919, p. 18

An illustrated article giving a non-technical description of manufacture of yellow, red, and blue printing inks for photomechanical work.

Pictorial Steel-Engraving on Commercial Basis

0714

Inland Printer, Sept., 1919, p. 685

An excellent engraving is shown of General Pershing, produced partly by photo-mechanical methods and partly by hand-engraving.

Duplicating Screen for Rotary Gravure

H. Calmels

M07322

Le Procédé, Aug., 1919, p. 117

Describes process and precautions necessary in making copies of original screens by dry plates, by carbon process, and by fish glue enamel.

Half-Tone Printing on Bond Paper

07339

Process Monthly, June, 1919, p. 90

Directions with regard to inks, overlays and press treatment.

Process Engraving Notes

S. H. Horgan

Inland Printer, Sept., 1919, p. 653

Prices of photo-engraving chemicals. Rotary-gravure work. Reducing cost of production. Screen angles. Making offset plates.

Extinguishing Celluloid Fires

Phot. J. Amer., 1919, p. 470

Abstract of report from the Chemical Laboratory of the Massachusetts District Police published in the Journal of Industrial and Engineering Chemistry, 1919, p. 893.

Mr. A. Catford, formerly manager of the Professional Department of Kodak, Ltd., has joined the staff of Messrs. Houghtons, Ltd.

B. J., 1919, p. 537

## 2. Physics

### Methods of Measuring X-Rays

R. Gloker X43

Beibl. Ann. d. Phys., 1918, 42, p. 438,  
from Physik.-Zeits., 1917, 18, pp. 302, 330

Three groups of methods for determining the intensity of X-rays are described. In the thermal method the radiation is absorbed and measured as heat. Of electrical effects, the ionization of gases is that most frequently used; it is not always reliable, however. The secondary emission of electrons of metals and the alteration of the conductivity of selenium have been applied as quantitative methods of measurement, but these are not yet sufficiently developed for use in practice. The photometric determination of the blackening of the photographic plate is applicable only to homogeneous rays. The determination of the current strength and the potential in the X-ray tube offer a means of comparing the intensities. The hardness is measured by determining the medium-hardness, by repeated measurements of the absorption and by separating the individual components of the radiation. The upper limit of the hardness can be determined by measuring the potential in the circuit.

### Some Practical Daylight Measurements in Modern Factory Buildings

E. G. Perrot and F. C. Vogan

Trans. Ill. Eng. Soc., Aug., 1919, p. 257

A large amount of data is given relative to the intensity and distribution of daylight illumination in buildings under a wide variation of conditions such as time of day, month, size of rooms, size of windows and size, direction and distance of surrounding buildings. Data not suitable for abstraction.

### Metal Mirrors for Searchlights

R. B. Hussey

Gen. Elec. Rev., Sept., 1919, p. 652

Production of 60-inch metal searchlight mirrors by electroplating is described.

### Searchlight Electrodes

W. H. Hardman

Gen. Elec. Rev., Sept., 1919, p. 685

Requirements demanded of the finished product. Development methods and process of manufacture.

### Searchlight Development

E. Thomson

Gen. Elec. Rev., Sept., 1919, p. 722

Traces the development to the present time.

### Adaptation of the High Intensity Arc to the Open-type 60-inch Army Searchlight

J. T. Beechlyn

Gen. Elec. Rev., Sept., 1919, p. 655

Deals with the characteristics of the lamp, problems of mounting, ventilation, and control.

## Glass Searchlight Mirrors

H. D. Minchin

Gen. Elec. Rev., Sept., 1919, p. 660

Deals with the characteristics of the glass mirror and describes some of the difficulties met in its production. Testing methods.

## Searchlight Testing

F. A. Benford

Gen. Elec. Rev., Sept., 1919, p. 668

Describes the testing grounds and instruments used in the testing of military searchlights.

## Preparation of Self-Luminous Material

E. Parade

J. Soc. Chem. Ind., 1919, p. 590A.

Radioactive zinc sulfide is used in the preparation of plastic self-luminous material, care being taken that the crystalline character of the zinc sulfide is not destroyed during the mixing with the other constituents. (German Patent 311500)

## Spherical Aberration in the Eye

R. M. Lockwood

Optician, Sept., 1919, p. 50

When the pupil of the eye is larger than 4 mm., spherical aberration becomes troublesome, and vision can not be made perfect. With pupil extended to full opening or perfectly dark adapted there is a difference of 6.6 diopter in power between central and edge zone.

The Limit of the Sensibility of the Eye and the  
Minimum Radiation Visually Perceptible

H. Buisson

J. de physique, 1917, p. 68

This investigator obtains a value intermediate between those of Russell and Reeves, namely,  $12.6 \times 10^{-10}$  erg-second.

## Pseudoscopic Stereoscopy

E. Colardeau and J. Richard

J. de physique, 1916, p. 81

A mode of observation of stereoscopic radiographs is described, which is said to furnish information of great assistance to surgeons in operations for the extraction of projectiles.

## A Theory of Color Vision

R. A. Houstoun

Phil. Mag., Sept., 1919, p. 402

An amplification of the author's previous paper (1916) on this subject, being a mathematical formulation of Dr. Edridge-Green's theory.

## A Syntonic Hypothesis of Color

E. M. Barton and H. M. Browning

Vision with Mechanical Illustrations

Phil. Mag., Sept., 1919, p. 338

With the advent of the electron theory and Planck's "resonators" the difficulties of a resonance theory of color vision are becoming less. Experiments are here

described with a set of three vibrating responders in the shape of pendulums whose relative vibrational frequencies correspond to red, green and violet. Most of the facts of color vision are successfully imitated.

On Light-positive and Light-negative  
Photophoresis

I. Parankiewicz

Ann. d. Physik, 57, 1918, p. 489

An investigation with sulfur and selenium. The light-negative photophoretic action on selenium particles is about six times as great as that of the same beam on sulfur particles of the same mobility. The photophoretic action reaches its maximum on sulfur particles of  $27 \times 10^{-6}$  cm. radius and on selenium particles of  $15 \times 10^{-6}$  cm. radius. It was established that the photophoresis of Ehrenhaft is a direct action of radiation on matter.

Measurements on the Index

W. F. Meggars and C. G. Peters

of Refraction of Air for Wave-Lengths from 2218 Å. U.  
to 9000 Å. U.

Bull. Bur. Stand., July 12, 1919, p. 697

This is a paper of fundamental importance, the work being done at the Bureau of Standards. A Fabry and Perot interferometer was used, as this form of instrument offered better control of temperature and pressure conditions. The source of light was the standard iron arc, except that, in addition, discharge tubes of argon and neon were used in the infra-red and an arc between poles of copper and carbon was used in the ultra-violet.

The Positions of Atoms in Metals

A. W. Hull

Proc. Amer. Inst. Elec. Eng., Oct., 1919, p. 1171

When a narrow beam of X-rays passes through a fine powder of any crystalline material, it produces on a photographic plate placed just behind the powder a pattern of concentric circles. The results of the analysis of this pattern of concentric circles for twenty common metals and several salts, with examples and brief description of the method, and a discussion of the results, are given.

Luminous Emission and the Law of Total  
Radiation from Incandescent Metals

T. Peczalski

J. de physique, 1916, p. 110

The paper presents the results of experiments on the luminous emission of incandescent metallic filaments and establishes relations between this emission and the total radiation of the metal.

Remarks on the Diffusion of Light by Gases

C. Fabry

J. de physique, 1917, p. 89

The author shows that certain natural phenomena are explained by the diffusion of light by gases.

- The Vacuum Tube as a Generator of Alternating-Current Power  
T. H. Morecroft and H. T. Friis  
Proc. Amer. Inst. Elec. Eng., Oct., 1919, p. 1193

The first part of this article deals with the operation of the tube when separately excited. The second part deals with the efficiency of the tube as a generator. Oscillograms are given to show the action of the tube under practically all conditions which are likely to occur.

- A Report on Electro-Magnetic Induction  
S. J. Barnett  
Proc. Amer. Inst. Elec. Eng., Oct., 1919, p. 1151

This report discusses briefly the chief fundamental results obtained from the days of Faraday to the present time in studying the electro-motive forces ordinarily referred to the domain of electromagnetic induction.

- A New Method of Weighing Colloidal Particles  
E. F. Burton  
Proc. Roy. Soc., June, 1919, p. A.480

The force of gravity is augmented by an electric field and the rate of settling is measured. Results for colloidal silver are in good agreement with those obtained by the counting method.

- Color and Chemical Constitution (J. Martinet)  
See 3A.

- The Crystallography and Optical Properties of Pinaverdol (E. T. Wherry and E. Q. Adams)  
See 3A.

### 3. Chemistry

#### (A) Physical and Inorganic Chemistry

- Color and Chemical Constitution  
J. Martinet  
Rev. gén. sci., 1919, p. 334

A review of the theories, past and present, arranged in chronological order, advanced to explain the phenomenon of color, prefaced by a discussion as to the meaning of color, the methods of measuring absorption of light, and the significance of light-absorption. With the discussion of each theory are presented exceptions to that theory which have led to its modification or abandonment. The light-absorption theories of Campbell and Baly are briefly cited.

- Thermochemical Application of the Grating Theory  
M. Born  
J. Chem. Soc., 1916, p. ii. 214,  
from Ber. physik., 1919, p. 13

A theoretical paper in which it is shown that the formation or decomposition of a crystalline substance must be accompanied by a heat change which is equivalent to the electrical energy of the grating. In the case of sodium chloride, for example,

the heat of formation is given by the relation  $Q_{NaCl} = U_{NaCl} - Z_{Na} - Z_{Cl}$ , where  $Z_{NaCl}$  is the heat equivalent of the electrostatic crystal energy and  $Z_{Na}$  and  $Z_{Cl}$  are the heat equivalents of the work required for the subdivision of sodium and chlorine, respectively, into atoms and for their ionization.

Absorption Spectra of Aqueous Solutions  
of Colorless Metallic Complex Salts

Y. Shibata, K. Fukagawa  
and J. Asado

Chem. Abst., 1919, p. 1790

Among the salts examined were several ammoniacal silver salts and a number of complex cyanides.

Crystalline Structure of Alums and the Rôle of  
Water of Crystallization

L. Vegard

J. Chem. Soc., 1919, p. ii. 207,

from Ann. d. Physik, 1919, 58, p. 291

The author shows that the measurements of Schaefer and Schubert do not prove that water of crystallization occurs as a structural component in the grating system.

Purification of Aluminium  
Salts

Norske Aktieselskab för Elektrokemisk  
Industri

Chem. Met. Eng., Sept., 1919, p. 405

Aluminium salt solutions are purified from iron by treatment first with alumina and then, in order to remove the last traces, with ferrocyanide, the iron having been oxidized to the ferric condition if not originally present in such. (British Patent 123720)

The Crystallography and Optical  
Properties of Pinaverdol

E. T. Wherry and E. Q. Adams

J. Wash. Acad. Sci., 1919, p. 396

The crystal system proved to be monoclinic. The ratio  $a:b:c = 1.1014:1:1.6053$ . A great number of different surfaces were obtained and determined. The reflections on these surfaces showed various colors from violet to yellow. The refractive index lengthwise of the crystals is about 1.58 for 6250 Å. U. The other two indices are much greater than 1.75; they probably reach a value of at least 2.00.

Reaction between Hydrogen Sulfide and Sulfurous  
Acid in Aqueous Solution

E. Heinze

J. Soc. Chem. Ind., 1919, p. 573A.,

from J. f. prakt. Chem., 1919, 99, p. 109

This is an extensive and quantitative investigation. When the reacting substances are in the ratio  $2 H_2S : H_2SO_3$  the final condition is represented by the equation  $2 H_2S + H_2SO_3 = 3S + 2 H_2O$ , but the reaction only comes to completion after several months. Intermediately, and especially when sulfurous acid is present in excess of the above-mentioned ratio, any or all of the compounds of the formulae  $H_2SO$ ,  $H_2SO_2$ ,  $H_2S_2O_3$ ,  $H_2S_2O_4$ ,  $H_2S_4O_6$  and  $H_2S_5O_6$  may be formed.

- Sodium Hydrogen Sulfit Crystals ( $\text{NaHSO}_3 \cdot 3\text{H}_2\text{O}$ ) W. Schöler and  
A. Wilhelm

J. Chem. Soc., 1919, p. ii. 341,  
from *Zeits. angew. Chem.*, 1919, 32, p. 198

The sodium hydrogen sulfit (sodium bisulfit) crystals deposited at low winter temperatures from aqueous solutions contain three molecules of water. They are 2-6 cm. long, 2-3 mm. thick, hexagonal in section, and belong apparently to the rhombic system. At higher temperatures or when removed from the mother liquor, they rapidly lose water and disintegrate, leaving a residue of anhydrous sodium hydrogen sulfit containing sulfate and traces of pyrosulfit (metabisulfit) if they have been exposed to the air.

- Action of Hydrogen Peroxide on Potassium Ferricyanide E. Lück  
and on Potassium Ferrocyanide

J. Chem. Soc., 1919, p. i. 389

After gentle warming, in aqueous solution, crystals having the compositions  $2\text{K}_3\text{Fe}(\text{CN})_6 \cdot 3\text{H}_2\text{O}_2$  and  $2\text{K}_4\text{Fe}(\text{CN})_6 \cdot 3\text{H}_2\text{O}_2$ , respectively, are obtained on cooling.

- Complex Compounds of Tervalent Iron R. F. Weinland and  
with Hypophosphorous Acid W. Heiber

J. Chem. Soc., 1919, p. ii. 288,  
from *Zeits. anorg. Chem.*, 1919, 106, p. 15

It is shown that ferric iron can yield either complex cations or complex anions with hypophosphites.

- Adsorption of Dyestuffs by Inorganic Substances (F. Fiegl) See 3C.

- Stability of Sodium Thiosulfate Solution (I. M. Kolthoff) See 3B.

- Sulfit and Alkali (B. J.) See 1.

- The Preparation of Ferric Oxalate (E. J. Wall) See 1.

- Influence of Temperature on Photographic Plates (G. v. Dalezki) See 1.

## (B) Analytical Chemistry

- Stability of Sodium Thiosulfate Solutions I. M. Kolthoff  
J. Soc. Chem. Ind., 1919, p. 556A.

Solutions of sodium thiosulfate should be kept in the dark with as little access of air as possible. A layer of petroleum spirit on the surface may be applied to prevent oxidation. The addition of about 0.2 gramme of sodium carbonate (per liter presumably—Abstractor) is sufficient to stabilize the solution almost completely. The decomposition may also be prevented to some extent by the presence of 0.01 gramme of mercuric iodide.

## Volumetric Estimation of Sulfurous Acid

T. J. I. Craig

J. Soc. Chem. Ind., 1919, p. 96 T.

The sulfurous acid (or acidified sulfite) solution is added to a known excess of hydrogen peroxide solution acidified with dilute sulfuric acid, and the excess of hydrogen peroxide is then titrated with standard permanganate. The reaction proceeds according to the equations (1)  $\text{SO}_2 + \text{H}_2\text{O}_2 = \text{H}_2\text{SO}_4$  and (2)  $5\text{H}_2\text{O}_2 + 2\text{KMnO}_4 + 4\text{H}_2\text{SO}_4 = 2\text{KHSO}_4 + 2\text{MnSO}_4 + 8\text{H}_2\text{O} + 5\text{O}_2$ .

## Determination of Sulfates as Barium Sulfate

I. M. Kolthoff and

E. H. Vogelenzang

J. Soc. Chem. Ind., 1919, p. 573A.,  
from Zeits. anal. Chem., 1919, 58, p. 49

The authors review the sources of error in the determination of sulfates as barium sulfate and conclude that it is not possible to prescribe a general method for the determination in any or every solution.

## Method for Identification of Salts of Sulfur Acids

A. Sander

J. Chem. Soc., 1919, p. ii. 241,  
from Chem.-Zeit., 1919, p. 173

Sulfates, sulfites, hydrogen sulfides, thiosulfates, polythionates and sulfides may be identified by their behavior towards mercuric chloride, this reagent also serving, to a certain extent, for the identification of the compounds in the presence of one another.

## Scrubber for Ammonia Distillations

B. S. Davisson

J. Ind. Eng. Chem., 1919, p. 465

An efficient still head is figured which is made of Pyrex glass. This apparatus reduces the uncertainty of results from 0.216 mg. of nitrogen to 0.005 mg.

An Improved Method for the Estimation of  
Nitrates in Water by means of the  
Phenolsulfonic Acid Reaction

R. C. Frederick

Analyst, 1919, p. 281

Apparatus for the Rapid Analysis of Air in  
Rooms, etc.

E. Kohn-Abrest

Comp. rend., 1919, 168, p. 1019

The apparatus consists of a 5-liter aspirator, the upper part of which is connected separately with a number of absorption flasks containing suitable reagents. Carbon dioxide is estimated directly, and carbon monoxide after treatment with iodic anhydride, by the time required to produce a turbidity in a barium hydroxide solution when the air is bubbled through at a given rate.

A Gravimetric Method of Comparing Viscosities  
of Varnishes, etc.

H. C. S. de Whalley

Analyst, Aug., 1919, p. 288

A microscope slide is weighed in a beaker over which is a watch glass. It is then dipped to a definite depth in sample for 5 seconds, slowly withdrawn, drained

for 1 minute, replaced in tared beaker, covered and weighed. The weight of adherent sample multiplied by 100 gives convenient viscosity number. Results agree well and very viscous samples are easily measured.

The Hydrochloric Acid Color Method for  
Determining Iron

J. C. Hostetter

J. Amer. Chem. Soc., 1919, p. 1531

This is a paper from the Geophysical Laboratory of the Carnegie Institution of Washington. The author has worked out conditions for the colorimetric determination, with fair accuracy, of traces of ferric iron, by dissolution in constant-boiling hydrochloric acid and comparison with a standard ferric chloride solution. He points out that the iron impurity of commercial preparations often largely takes the form of fragments of an iron oxide scale derived from the apparatus used in the process of manufacture.

Estimation of Iodides

P. Godfrin

Analyst, Aug., 1919, p. 302

Method based on reaction of iodides and potassium dichromate in the presence of hydrochloric acid. Ten cc. of an approximately 1% solution of the iodide are treated with 1 cc. of 10% potassium dichromate solution and 15 drops of hydrochloric acid. After 30 seconds, 20 cc. of 10% sodium acetate solution, 2 cc. of starch solution and 50 cc. of water are added, and the iodine is titrated with thiosulfate solution. The sample is sometimes first titrated with dilute iodine solution, with starch as indicator, to destroy substances which may destroy iodine; but three minutes must elapse in this case after the dichromate has been added and before the addition of the sodium acetate.

New Microchemical Reaction for Gold and Silver

F. Emich

Analyst, 1919, p. 301,

from Chem.-Zeit., 1919, p. 203

When a solution of gold chloride is mixed with silver chloride and rubidium (or cesium or potassium) chloride, blood-red crystals of what is probably a triple chloride are produced. The substance is only sparingly soluble in water and is not decomposed by acetic acid.

A Rapid Method for Determining Nickel  
and Cobalt in Ores and Alloys

W. R. Schoeller and  
A. R. Powell

Analyst, 1919, p. 275

A Modified "Etching" Test for Fluorides

W. Partridge

Analyst, 1919, p. 234

The following method has always given a result with 0.010 gramme sodium fluoride. Two or three cc. of 25% sulfuric acid (made by volume) are added and covered with a layer of butter fat. The test-tube is kept upright in a bath at 80-95°C. for three hours. The tube is cleaned and dried and a positive test consists of an etching where the acid liquid had contact.

**(C) Colloid Chemistry****Adsorption of Dyestuffs by Inorganic Substances****F. Feigl**

J. Soc. Chem. Ind., 1919, p. 569A.

The substances tested were calcium carbonate, strontium carbonate, barium carbonate, barium sulfate, lead sulfate, aluminium hydroxide, mercurous chloride, silica, felspar, kaolin and blood-charcoal; with a number of dyes of varied character. It was found that the colors remaining in the substances after washing with hot water were fast to light, air, washing with caustic alkali, and prolonged agitation with water, and appeared quite homogeneous under the microscope. In the particular case of calcium carbonate with acid violet, the ratio between the amount of dyestuff permanently adsorbed and that temporarily adsorbed and removable by washing with water was found approximately constant at about 0.3.

**The Distribution of Colloidal Silver Iodide in the  
Animal Body after Intravenous Injection****J. Voigt**

Chem. Abst., 1919, p. 2086

The colloidal silver iodide was found to be in part eliminated as such and in part reduced to and deposited as colloidal silver in the liver, spleen and bone-marrow.

**Colloidal Selenium****J. Meyer**

J. Chem. Soc., 1919, p. ii. 228,  
from Zeits. f. Elektrochemie, 1919, 25, p. 80

Very stable, orange-yellow to dark red selenium sols, whose particles are positively charged, are obtained by the action of dilute sulfuric acid on a solution of sodium selenosulfate.

**A New Method of Weighing Colloidal Particles (E. F. Burton)****See 2.****(D) Organic Chemistry****Preparation of 2:4-Dinitrophenol by Direct  
Nitration of Phenol****Marqueyrol and Loriette**

Bull. soc. chim., 1919, 26, p. 375

The procedure is briefly described.

**The Crystallography and Optical Properties of Pinaverdol  
and E. Q. Adams)****(E. T. Wherry****See 3A.****Cause of the Sensitiveness of (Organic) Chemical Compounds to Light  
(J. Plotnikow)****See 1.****Application of Dicyanine to the Photography of Stellar Spectra  
(P. W. Merrill)****See 1.**

## 4. Technology

### Solders for Aluminium

J. Soc. Chem. Ind., 1919, p. 584A.,  
from Bur. Stand. Circ. 78 (Jan., 1919)

Aluminium may be soldered satisfactorily after cleaning the surface of the metal by abrasion and tinning the surface to be soldered. A perfect union between solder and aluminium is difficult to obtain, but the higher the temperature at which tinning is done, the better the adhesion of the tinned layer. The joint between the tinned surfaces may be made in the usual manner with ordinary soft solder, and no advantage is to be found in the use of fluxes in either the tinning or jointing processes. Tinning solders should consist of a tin base with the addition of zinc, or of zinc and aluminium, to produce an alloy of suitable melting point. Suggested compositions for tin-zinc solders are: tin 85-50%; zinc, 15-50%. And for tin-zinc-aluminium solders: zinc, 8-15%; aluminium, 5-12%; tin, remainder. Excess of aluminium, or the presence of copper or antimony, should be avoided, as brittleness in the solder is undesirable. All alloys used for soldering aluminium are electro-negative to that metal, and the joint is therefore subject to corrosion when exposed to moisture.

### The Lubrication of Ball Bearings

H. R. Trotter

Mech. Eng., Oct., 1919, p. 811

The operating characteristics of a ball bearing as related to the problem of lubrication are discussed and the specifications for a satisfactory oil are given. The use of grease and graphite as a lubricant is next presented, and the paper concludes with a suggested procedure for the analysis of lime-soap greases.

### Aluminium Alloys

Chem. Abst., 1919, p. 2009

Three United States patents (1305166 to W. J. Reardon, 1305300 to A. O. Mason, 1305551 to H. C. Kirk) for alloys containing 90% or more of aluminium.

### Experiments on the Rusting of Iron in Water that has been Softened by the Permutite Process

O. Bauer and E. Wetzel

Chem. Abst., 1919, p. 2189

It was found that atmospheric oxygen becomes more freely dissolved in softened than in unsoftened water, that the former in consequence of its higher oxygen content has a greater corrosive action on cast or ingot iron, and that corrosion (with either softened or unsoftened water) at either room temperature or when boiling under 20 atmospheres pressure can be greatly diminished by the addition of sodium sulfite.

### Radium Production

R. B. Moore

Science, June 13, 1919, p. 564

The author states evidence that Viol's claim that 500 grammes of radium should be available from American carnotite is much too high. On account of its scarcity, and the availability of mesothorium for luminous paints and other such purposes, radium should be reserved chiefly for medical use.

**Technical Research—The Man and the Job****Electrician, July, 1919, p. 15****A general discussion.**

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**Books****Recent Accessions to the Library:****Dictionary of English Synonyms****R. Soule****Little, Brown & Co., Boston, Mass.****Applied Optics, Vol. II****A. Steinheil and E. Voit, translated  
by J. W. French****Blackie & Son, London****A manual for the practical lens computer.**

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**Patent Abstracts**

(NOTE—The symbol appearing to the right and above each patent abstract is the index symbol according to the classification of photography in use at the Laboratory.)

**U. S. Patents****1313587****L. F. Douglass      K31**

A Motion Picture Color Camera in which the color records are taken through different lenses upon different films. Each film is drawn down two spaces between exposures and the pictures are taken alternately through the two lenses. The resulting negatives will then consist each of alternate picture areas and clear spaces. The negatives are placed one above the other with the picture areas of each registering with the clear spaces of the other and a single positive made by printing through both at once.

**1313615****W. M. Thomas.      K31****Assigned by Mesne Assignments to Thomas-Oberkirch Co., Ltd.**

A Motion Picture Color Apparatus. It is designed particularly for three color work and it is stated that with forty-eight exposures per second it gives exceptionally long exposures. The length of the exposure is varied for the different colors, the red, green and violet being exposed respectively  $1/45$ ,  $1/54$  and  $1/68$  of a second.

**1315464****J. G. Capstaff. Assigned to E. K. Co.      KJ88**

A Method of Color Photography in which photographic film is so treated as to become differentially soft and permeable at the points adjacent the image which is bleached out. The film is then dyed.

1313197

A. W. McCurdy D12—E12

A Coating Machine intended particularly for the application of a waterproofing material to a finished photographic film.

1312034

J. G. Jones. Assigned to E. K. Co. D13

A Coating Machine for applying liquid to sheets of paper or other material. The thickness of the coating may be very accurately gauged and uniformly applied.

1313234

J. G. Jones. Assigned to E. K. Co. E12

A Process for Wrapping Articles particularly photographic film spools in which the spools are wrapped in metal foil and paper with a locked seam. This is twisted between consecutive spools; the twist is then severed and the material flattened against the ends of the spools.

1303426

E. J. Wall P—158

Dye Recovery. To recover dye from a dye solution, a metallic hydroxide which will produce a lake with the dye is precipitated in the solution, the lake is separated, and subsequently treated to recover the dye. (J. Soc. Chem. Ind., 1919, p. 530A.)

1315324

A. Mutscheller XC11

A Photographic Material particularly sensitized for X-rays by incorporation in the emulsion of a material which when exposed to X-rays produces a chemically active fluorescence. Among materials mentioned are: pentadecyl-p-tolyl ketone, acridine hydrochloride or anthracene derivatives.

1315887

T. M. Watson 045

A Stereopticon Slide consisting of a sheet metal holder with flanges struck in two directions so as to hold two separated glass plates, one of which carries a transparency.

1313564

F. A. Todd 083—219

A Camera designed to be hung from a kite or other aerial support. It is to be actuated electrically from the ground. A lens pointed directly downward takes one picture and a revolving lens makes a panoramic exposure upon a cylindrical film.

1311383

G. H. Drasser, Jr. Assigned to L. B. Koch 089

A Motion Picture Target for use with rifle ranges. The impact of the bullet causes the mechanism to stop so as to show the success of the shot.

1315307

L. J. R. Holst. Assigned to A. Brock, Jr. 2105

A Film Support for use in cameras consisting of a glass plate having one surface flat to support the film and the other surface concave with the center of radius of curvature coinciding with the second nodal point of the camera lens, so that the light from the lens will not be refracted by the plate.

1313454 G. C. Beidler 215

A Film Camera in which the free end of the film is drawn into a hollow roll. It may be severed at any time and the roll completely closed so that the used portion of the film may be removed from the camera in daylight.

1314523 R. Kroedel. Assigned to E. K. Co. 215

A Film Spool Camera of the box type comprising an inner frame carrying rolls. A hinged member carries axes for both film spools.

1313285 S. H. Gallmeier 2151

A Roll Film Camera designed for focusing between exposures. The film may be rewound on a spring shaft after each exposure.

1314030 S. P. Walsh 2151

A Roll Film Camera having an opaque focusing screen in front of the picture area. This is focused by viewing the front surface of the screen through a trap door located in the place of the usual finder. The user must lean over and peer into the camera. When the trap door is closed the lens is moved so as to compensate for the distance between the screen and the location of the film.

1311996 F. F. Pulver. Assigned  $\frac{1}{2}$  to L. H. Pulver 2152

A Quick Wind for Roll Film Cameras of the type in which a spring motor is released after each actuation of the shutter. Means is provided for the compensation for the increasing size of the takeup roll.

1315655 W. A. Brown 2153

Means of making an inscription upon a sensitized material in the camera. It comprises a holder for a stylus or pencil outside of the camera which operates by a mechanism similar to a pantograph a movable source of light within the camera which light prints upon the sensitized element a duplicate of the writing.

1315105 S. Figueroa 219

A Magnifying and Projecting Apparatus that may also be used as a camera. It is intended particularly for the projection of opaque objects through a microscope upon a screen or a sensitive surface.

1313241 W. J. Ashley 221

An Automatic Stereopticon Machine having two projectors and two sets of slides mounted on disks. They are alternately actuated so that there is always one picture on the screen.

1315118 J. P. Hansen 231

A Magnesium Lamp for flash-light purposes. A match is drawn across a striking composition and causes the ignition of the flash powder.

1313815 J. P. Hansen 241

A Photographic Printing Apparatus including a lamp box and a copying camera. It may also be used for direct printing.

1315732 H. H. McIntire 241—243

A Photographic Printing Apparatus in which a mask is placed at some distance in front of the negative for vignetting effect.

1313395 W. A. Lenz 257

A Washer for Photographic Prints. A central trap is so adjustable that the height of the water may be varied. The water is introduced from a tube above the basin at such angle as to cause rotation of the bath.

1313872 J. A. Andrushes 2629

A Diaphragm-controlling Attachment for Cameras of the studio type which are to be focused with the use of a hood. The attachment is controlled from the rear of the camera and a scale in the rear of the camera can be electrically illuminated so that the user can observe it without withdrawing from under the hood.

1314193 C. E. Akeley. Assigned to Akeley Camera, Inc. 3105

An Attachment for Motion Picture Cameras comprising a reflecting mirror placed in the rear of the film so that the observer may see the film and use it for focusing purposes.

1313243 C. E. Akeley. Assigned to Akeley Camera, Inc. 319

A Motion Picture Camera intended particularly for use in the trenches. Periscopes are provided for both the picture lens and the finder.

1314604 M. L. Parret 3201

A Motion Picture Projecting Machine, the intermittent movement for which is a variation of the Geneva gear type.

1315224 H. M. Hill 3201

A Motion Picture Projecting Machine having electro-magnetic means for imparting a step-by-step rotation to an armature which controls the film-engaging sprocket.

1315355 W. Wenderhold. 3201

Assigned to Cru Patents Corporation

Motion Picture Apparatus having positively driven auxiliary film feed rollers at various points in addition to the usual feed sprockets.

1312374 J. R. White 3207

Assigned to The Graphoscope Co.

A Projecting Apparatus in which one carbon electrode is placed in the axis of the optical system and a plurality of electrodes placed around it, arcs being formed from the central electrode to the others.

1313084

J. H.

Rewinder for Motion Picture Film having improved tension means.

1313738

J. C. Ram.

A Film Winding and Rewinding Apparatus consisting of a plurality mounted on parallel bars. One film reel at a time is moved to a point where it is positively driven while the film passes through the machine. Another is then moved to a point on another bar where it is positively driven to rewind last exhibited.

1315850

C. E. Akeley.

Assigned to Akeley Camera, Inc.

A Film Magazine for Motion Picture Cameras comprising supply and take-up reels and a toothed sprocket wheel. The magazine as a whole is intended for use with a particularly designed camera and may be applied very readily. The magazine has no sprocket wheels and the sprocket on the magazine is turned. It is particularly adapted for use in the trenches or in such other circumstances as require ease of operation.

1315708

J. Chanteux

A Screen for projection purposes consisting of a cloth base covered with a composition, upon which metallic powder is sprinkled while in a sticky condition. This produces a light-reflecting surface and upon this a light-diffusing coating composed of white gum and silver white is applied as by an atomizer.

1315743

A. L. Raven 324

A Motion Picture Screen consisting of a white woven fabric having a backing of white rubber, which is also forced through the mesh of the fabric, and a second backing of heavier fabric and black rubber.

1315882

E. W. Sweigard 07005

A Pneumatic Printing Frame for photo-mechanical printing, the top frame of which is balanced by means of coiled springs.

1313233

E. Grass. 07006

Assigned to E. K. Co.

A method of etching which consists in supporting a number of plates to be etched in a chamber in which air is blown. (The process is used in the Company's etcher unit—Abstractor).

12877

Color Photographs are made by means of a base which is non-adsorbent for aromatic preparations; a third which the base adsorbs; a third which is taken up by the base and which comprises cellulose nitrate not penetrate under the application, and may be vibrated or irregularly applied to individual lines. The film is exposed to formaldehyde vapor, chromate and exposure to desiccated, and the base is aniline, in ordinary or the application of these solvents. After a short interval, the applications of the stain are soaking in weak sulfuric acid. The colors are then intensification be produced, the third or otherwise applied to the base as a preliminary solvent which penetrates the film free for the treatment with a number of thin layers deposited upon it. If the film is side in contact with a sheet of uncolored side. A weak medium on a positive picture produced in the case of cinematograph films, naturally arranged thereon. operation

until the handle stop and the access to the spot on the film is fixed in the working position. The film is then exposed to the light and the handle is moved to the position

Color Photographs are made by means of a base which is non-adsorbent for aromatic preparations; a third which the base adsorbs; a third which is taken up by the base and which comprises cellulose nitrate not penetrate under the application, and may be vibrated or irregularly applied to individual lines. The film is exposed to formaldehyde vapor, chromate and exposure to desiccated, and the base is aniline, in ordinary or the application of these solvents. After a short interval, the applications of the stain are soaking in weak sulfuric acid. The colors are then intensification be produced, the third or otherwise applied to the base as a preliminary solvent which penetrates the film free for the treatment with a number of thin layers deposited upon it. If the film is side in contact with a sheet of uncolored side. A weak medium on a positive picture produced in the case of cinematograph films, naturally arranged thereon. operation

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128781

Color Photography. Photographs on or other support having films of cellulose, etc., having a film on one side, one of the before exposure and remaining in the case of the colored images have been shown.

129638

A color film of colored images on the film on both sides of the film are exposed to the second exposure and next exposed to the second

1313084

J. H. Genter 3208

Rewinder for Motion Picture Film having improved tensioning and wiping means.

1313738

J. C. Ramsher 3208

A Film Winding and Rewinding Apparatus consisting of a plurality of film reels mounted on parallel bars. One full reel at a time is moved to a point on a bar where it is positively driven while the film passes through the machine. An empty reel is then moved to a point on another bar where it is positively driven to rewind the film last exhibited.

1315650

C. E. Akeley. 3204

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E. Grass. 07006

Assigned to E. K. Co.

A method of etching which consists in supporting a number of plates to be etched in a mordant through which air is blown. (The process is used in the Company's etched plate department.—Abstractor).

## British Patents

129717

T. J. Smith K/32

**Color Photography.** Multicolor screens for use in color photography or cinematography are made by laying lines or areas of an aqueous colored colloid on a base which is non-adsorbent for aqueous preparations but is adsorbent for alcoholic and aromatic preparations, and staining the base by a solution of a dye in a fluid which the base adsorbs; a third color may be added by ruling or spraying, etc., a dye solution which is taken up by the base or the colloid or by each of them. The base may comprise cellulose nitrate or acetate and may be made thin so that the stain does not penetrate under the colloid. The colloid may be fish-glue dyed before or after application, and may be ruled on the base. In this operation, the ruling pen may be vibrated or irregularly moved so as to give a rough or dotted character to the individual lines. The fish-glue or other colloid may be rendered insoluble by exposure to formaldehyde vapor after application, or by the addition to it of a soluble chromate and exposure to light after application. The colloid is then thoroughly desiccated, and the base is stained. The stain may comprise an aniline color in aniline, in ordinary or methyl alcohol or acetone, in nitrobenzene, or in a combination of these solvents, and is quickly brushed, mopped, or soft-rollered over the base. After a short interval, the stain is blotted off, and, if necessary, followed by other applications of the stain and blottings-off. Excess of aniline, etc., is then removed by soaking in weak sulfuric acid or other solutions, and the screen is washed and dried. The colors are then intensified or modified if desired, and, if a three-color screen is to be produced, the third color either in aqueous or aniline solution is sprayed, ruled, or otherwise applied to the surface. Alternatively, the third color may be applied to the base as a preliminary operation by the use of a colloid, resist and a dye in a solvent which penetrates the base, the colloid being washed off so as to leave the base free for the treatment set forth above. The colored side of the screen may be coated with a number of thin coatings of varnish, and a sensitive emulsion may then be deposited upon it. If the base is thin, the screen may be mounted with its colored side in contact with a sheet of celluloid, and the emulsion may be deposited on its uncolored side. A weak monochrome print in a neutral key may be superimposed on a positive picture produced by means of color screens as described, and in the case of cinematograph films, monochrome pictures and heliochromes may be alternately arranged thereon. Specification 22138/95 is referred to.

128781

J. H. Christensen K/42

**Color Photography.** Photographs in colors are produced by means of a collodion or other support having films on each side and a support of paper, glass, celluloid, etc., having a film on one side, one or each of the supports being mounted in a frame before exposure and remaining therein until all the treatments necessary to produce the colored images have been effected and the supports are stuck together.

129638

W. V. D. Kelly K/43

A color film for still-life or motion-picture photography has complementarily colored images on opposite sides, which occupy the interspaces left after exposing the film on both sides to a line or other patterned black-and-white screen. Both sides of the film are exposed through a line screen, the screen being positioned on the second exposure so that the areas exposed on the one side register with the spaces nexposed to the screen on the opposite side. The two component negatives are

then printed in register on opposite sides, the component picture components thereby filling the interspaces previously unexposed. The positive film is developed, fixed, and the images on the opposite sides are colored in colors complementary to the corresponding negatives. The whites of the picture are produced by oppositely positioned and adjoining lines only, whilst blacks are produced by a full density portion of one of the picture images and the superposed complementary colored line portion on the opposite side. In the case of a moving-picture negative having a recurring series of pictures taken through alternating filters, the positive is printed by giving the negative a double shift to print all the components of one color consecutively on one side, the alternating pictures of the other color being printed on the opposite side.

130002

P. D. Brewster K/31

Color Cinematography. The invention claimed relates to a camera illustrated and described for simultaneously taking two color records, say, red and green, on two separate films, these films being afterwards used for producing red and green records accurately registered on either side of the same positive film so that on projection pictures in so-called natural colors are produced. The films are fed forward step by step and, when at rest, register pins engage perforations in their edges to position them in the exposure apertures, two springs retracting the pins before the films move on. Means are provided for adjustment of the prism, or the carrier plates for the pins to ensure the registration being in the required position. Another form of camera is described in which the pins are stationary and the film is moved on to and away from them, but this form is not claimed nor are the printing means and films described. In the printing device there are devices for feeding and registering and for clamping the films together, and the special films described may have perforations between the individual pictures or circular marginal perforations or some of the marginal perforations may be omitted.

128938

E. C. Bass 215

Photography. In a camera for roll-films, the film is intermittently fed by claw teeth on a reciprocating frame which works in conjunction with a sliding plate shutter having two blades. The shutter is set for an exposure during a feed movement of the frame, and on the return idle movement an exposure is made.

129810

A. Herbert and L. Miles 215

Roll Film Cameras. A screen is unwound from a roller, against the action of a spring, by bands passing over pulleys actuated by pinions and a handle, and passes over guide-rollers near the focal plane. The sensitized strip is unwound in the focal plane from a pulley over a guide-roller, and is held against the winding-off roller by an auxiliary roller. The amount of the sensitized strip exposed beneath the screen is read on a graduated disk prevented from rotating by a stop, the whole or part of the strip in the focal plane being covered as the handle is at the zero mark or other mark on the disk. The screen and strip winding means may be interlocked by a pinion, fast to the spindle of the strip roller, and a loose pinion which may be locked to the handle by a plunger on the handle and holes in the pinion corresponding to the graduations on the disk. In operation, the plunger is withdrawn from the pinion, and the handle is rotated till the desired amount of film is uncovered by the screen. The plunger is then engaged with the pinion, the rollers being thereby connected and held by friction, or by a ratchet and pawl, or by friction brake if necessary. After

exposure, the screen and strip are unwound till the handle stops and the exposed portion of the film is cut off. To give ready access to the spool, the roller and guide are supported on arms hinged to the body and fixed in the working position by stops and turn-buttons or the like if desired. Stops are provided to locate the arms in the horizontal position. The handle may be omitted, the handle serving to wind both blind and film.

128662 A. G. Pickard and F. Slinger 219

**Photographic Cameras.** In a magazine plate-holder and plate-changing apparatus having magazines for the unexposed plates and for the exposed plates, and a sliding frame by which the plates are transferred from one magazine to the other, as described in Specification 11651/15, a clock-work spring, or other motor, is provided so that, on release of the shutter, or on starting the motor, exposure is effected, the plate is transferred, and the shutter is reset.

129537 L. Shaw 253

**Photography.** In apparatus for developing, washing, and drying prints, more especially blue prints, the print passes from the bath through squeezing-rollers, is introduced between an endless carrier-apron and an internally heated drying-cylinder and is delivered on to a drum-shaped receiving platform.

129601 J. Ashford 2612

**Tripod and like Stands.** A photographic and like tripod stand with telescopic legs has the upper sections of the legs open-sided channel form. The inner sections have projections which slide in the slots and when the legs are extended engage slots in fittings, on the lower ends of the upper sections of the legs. A clamping screw and nut may be provided on each middle section and a spring catch on each bottom section of the legs.

129037 A. G. Pickard and F. Slinger 2622

**Shutters.** In roller-blind shutters, e. g., such as are described in Specification 6238/12, means are provided for holding the winding-handle in gear during the setting of the shutter, and for holding it out of gear at other times.

129251 Pathé Frères and P. J. Chavez 3105—264

**Cinematograph Apparatus.** A cinematograph camera is fitted with a lens which is adjustable transversely and is moved in conjunction with the focusing movements of the view-finder. With a view-finder having a lens of different focal length proportional movement is given.

129946 T. Royle 3203

**Cinematography.** For the purpose of correctly adjusting the shutter blades in relation to the film feed, the blades are mounted on one part of a ratchet clutch which is held by a spring in engagement with the other part secured to the shaft.

129087 D. P. Dodd and F. B. Wyatt 3209

**Cinematographs.** Relates to cinematograph apparatus wherein, on the slowing down or breaking of the film outside the film gate, an electro-magnet is energized to

release a weighted safety shutter to shut off the projecting light and break the circuit through the magnet and motor.

128873

R. Gilpin 324

Projection Screens. The fabric of a cinematograph or like projection screen, after being sized, is treated with asbestos in paint form, after which it is treated with a mixture of gold size, terebene, turpentine, and aluminium powder.

129883

R. Harris 324

Cinematograph Screens. Cinematograph projection screens are coated with calcium tungstate to increase the luminosity and save electric current. A suitable mixture for the coating is stated to be: 5 pounds calcium tungstate, 1 pound canada balsam, 2 pints turpentine, 2 pints petrol, 1 pint castor oil. The proportions may be varied.

129226

W. R. B. Larsen and P. Fabersgade M07332

Photo-Mechanical Printing-Surfaces. To produce a cross-lined screen in which transparent openings occur at the crossings, two line screens are ruled and placed film to film. The clear lines are spaced at a distance  $x\sqrt{2}$ , where  $x$  is the spacing of the wider ruling, and cross at 45 degrees. For a screen with an opening at every crossing, double the number of lines are ruled spaced at a distance of  $\frac{x}{\sqrt{2}}$ .

## German Patents

303018

Verein f. Chem. Ind. 122

Manufacture from Infusible Cellulose Acetates of Substances or Films which melt at low temperatures. Films, distinguished by their tearing strength, can be made without camphor or camphor substitutes from cellulose acetyl esters which are soluble in pure ethyl acetate. These esters do not melt, but decompose or burn away when in contact with a flame or under prolonged heating, with development of combustible vapors. As shown by experiments, these cellulose acetates can be made non-inflammable by mixing them with triphenyl phosphate. They then melt at an open flame without igniting. The easiest way for combining the cellulose ester with the triphenyl phosphate is to dissolve the two components in a common solvent and then remove the latter.

PA 6604.7

# Monthly **ABSTRACT** Bulletin



December, 1919

Issued by the Research Laboratory  
**EASTMAN KODAK COMPANY**  
Rochester, New York



# Monthly Abstract Bulletin

Vd. 5, No. 12

December, 1919



## Errata

In the *Abstract Bulletin* for January, 1919: on page 11 (printed 231 in error), line 27, for "*A. Heppes*", read "*J. A. Heppes*".

In the *Abstract Bulletin* for April, 1919: on page 71, line 28, for "*A. J. Brocker*", read "*A. J. Brock, Jr.*"; on page 74, line 37, for "*Chinmayanadam*", read "*Chinmayanandam*"; on page 76, line 30, for "*A. S. Shorter*", read "*S. A. Shorter*"; and on page 82, line 7, for "*C. Ubelmesser*", read "*C. Uebelmesser*".

In the *Abstract Bulletin* for July, 1919: on page 152, line 1, for "*L. S. Brainard*", read "*L. S. Brainerd*".

In the *Abstract Bulletin* for August, 1919: on page 177, line 7, for "*C. Ubelmesser*", read "*C. Uebelmesser*".

In the *Abstract Bulletin* for October, 1919: on page 228, line 18, and again on page 229, line 1, for "*C. Ubelmesser*", read "*C. Uebelmesser*".

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## Additions to Numerical Classification

- 0315 Developing-Room Arrangements.
- 0316 Printing-Room Arrangements.
- 0318 Groups.
- 314 High-Speed Cameras.
- 389 Storage and Shipping Containers for Cinematograph Films.

## Photography

(NOTE—The symbol appearing to the right of the title and above each abstract is the index symbol according to the classification in use at the Laboratory.)

- A New Photographic Phenomenon      D. N. McArthur and      012  
A. W. Stewart  
J. Chem. Soc., 1919, p. 973

The authors find that if an unexposed plate is placed film upward at the bottom of a light-tight box, and over it is placed a negative also film up separated from the plate by two or more glass microscope slides, and then the closed box is placed in the neighborhood of a hot body such as a gas flame or an electric heater, after an exposure of some hours the plate on development gives a positive from the negative. The material of the box may be either wood or cardboard. Care was taken that the box was absolutely light-tight. The position of the source of heat had no effect on the results, the positive being just as sharp if the plate was between the source of heat and the negative, as if the arrangement were reversed. The matter is being further investigated.

- Photo-Chemical Reactions in Photography      F. Schanz      012  
Chem. Abst., 1919, p. 1679, from Zeits. wiss. Phot., 1918, 17, p. 261

The light-sensitiveness of photographic materials may be due chiefly to the organic vehicle (albumin, gelatin, collodion) rather than to the silver salt itself. Ultra-violet absorption spectra are given of dialyzed albumin, 10% gelatin solution, and collodion; with albumin the absorption is from 3000 A. U., with the other two from 3500 A. U. The absorption is negligible in similar spectra of potassium bromide and silver nitrate. In analogy with the increase of light-sensitiveness of albumin by dyeing, it is the relationship between the dye and the vehicle which is important in the color-sensitizing of photographic plates.

- The Constitution of Organic Dyestuffs and      P. R. Kögel      012  
Their Light-Sensitiveness under the Influence  
of Anethol and Other Sensitizers  
Phot. Korr., 1918, p. 224

It was shown by a long series of experiments that the photo-chemical behavior of dyestuffs is also a criterion for the determination of their constitution.

- The Production of Color in the P. O. P. Process      F. Formstecher      013  
Phot. Rund., 1918, p. 315

The author has investigated the way in which the color alters in accordance with the conditions. For the obtaining of red pictures, one should use moist paper, the strongest light and quick-printing negatives; for blue pictures, dry paper, a weak light and slow-printing negatives.

- On Definition and Grain P. Lucas 014  
 Phot. Rund., 1918, p. 353

A defense of the 4.5 x 6 cm. (approximately V. P., but squarer—Abstractor) size of plate in photography

- On the Theory of the Photographic Process F. Weigert 014  
 Phot. Ind., 1919, p. 593

Weigert proposes a theory of photo-chemical induction, according to which a kind of inter- or intra-molecular swelling is produced in the gelatino-silver bromide complex of photographic plates by absorption of light. It is supposed that a mutual repulsion of the molecules or atoms is effected, and that the developer is adsorbed more strongly to those altered parts than to others. The developable "latent image" is not a halogen-poorer reduction product, nor a mechanical disintegration product. Failing direct experimental proof resort is had to an analogous interpretation of the chromatropic accommodation of photohalides. It is found that on illumination with plane polarized red light photochloride become dichroic, which is attributed to ellipsoidal deformation of the supposedly spherical light-sensitive complexes. Concurrently with dichroism the layer becomes bi-refrangent. Similar effects were observed in the bleaching-out of cyanine dyestuffs in collodion, bi-refrarence being observed here before noticeable bleaching-out. Since the light-effects on both photochlorides and collodion dyestuffs are developable with acid silver, these results are considered as supporting the "photo-swelling" hypothesis.

- Gradation and Density Lüppo-Cramer 015  
 Phot. Ind., 1918, p. 224

Correct tone-production on the negative in portrait photography is with ordinary emulsions attained only with difficulty. Good results are obtained by mixing together a low-speed and a high-speed emulsion, and the results are better if the low-speed emulsion has a high gamma. By mixing various emulsions very varied gradation is obtainable.

- The Enigma of Physical Development R. E. Liesegang 017  
 Phot. Rund., 1918, p. 350

The author refers to the colloid-chemical work of Gutbier and Zsigmondy, and in particular to Zsigmondy's statement that "without the presence of nuclei no reduction makes its appearance." Liesegang now bases upon this a hypothesis as to the *rationale* of physical development.

- Hypersensitizing Commerical Panchromatic Plates S. M. Burka 018  
 Popular Astronomy, Oct., 1919, p. 526

The method consists in the use of an alcohol-ammonia bath shortly before exposure. The speed of a Wratten and Wainwright Panchromatic plate was increased six-fold in the green and red regions.

- Testing Lenses for Process and Copying Work E. K. Hunter 019  
 B. J., 1919, p. 565

Recommends the testing of process lenses in the camera with a test chart.

**Making Cold-Process Stripping Paper and Plates for Developing or Printing-out by Hand or Machine. II** A. J. Jarman A1375

Phot. J. Amer. 1919, p. 493

Describes the making of the sensitive emulsion (chloride) and the coating of this on the waxed paper previously described. Formulae are given for the printing and transferring operations.

**Ferroprussiate Prints**

C/71

Phot. Rund., 1918, p. 191

A great number of recipes are given for making ferroprussiate papers.

**A Device to Facilitate the Cutting of Plates for Small Camera:**

V. Jobling E11

B. J., 1919, p. 564

Describes a cutting gauge of grid form.

**Storing Sensitive Papers**

E13

B. J., 1919, p. 590

The Rajar Company calls attention to the importance of storing sensitive papers as near the floor as possible, and of keeping them from dampness.

**Actinometers and Other Means of Estimating Times of Exposure. II**

B. v. Krosigk F5

Phot. Rund., 1918, p. 36

This is a critical investigation of the various actinometers in use by photographers. For each instrument 200 trials were made; and the limits of correct exposure were taken as 25% and 200%. Thirty per cent of all the exposures were difficult out-door exposures, 30% were interiors, and the remainder ordinary exposures. The percentage of correct results given by each instrument was as follows:—

Wynne's Infallible meter (slightly altered).....	93
Watkin's Bee meter (slightly altered).....	90
Heyde's Aktino-Photometer.....	78
Foco-Belichtungsuhr.....	69
F W-Expometer.....	66
Mercier-Chronoskop.....	42

Mechanical instruments and exposure tables.....20-45

**Pressing the Button**

F6

B. J., 1919, p. 558

An editorial note on the best method of actuating a shutter release so as to avoid a jerk.

# A Simplified Method of Developing Autochrome Plates

A. and L. Lumière  
and A. Seyewetz

G1—K/33

B. J. Col. Sup., 1919, p. 37

The method depends upon the use of two developers of different strengths so adjusted that the second one requires the same time to complete development that the first takes for the image to appear.

## Solubility of Developing Agents

G1

Phot. Rund., 1918, p. 95

For the preparation of concentrated solutions of developing agents, it is important to know the exact solubility of the individual substances. According to Gravier this is as follows:—

	SOLUBILITY IN 100 CC. WATER		SOLUBILITY IN 100 CC. 5% Na <sub>2</sub> SO <sub>3</sub> SOLUTION AT 15° C.
	AT 15° C.	AT 40° C.	
Adurol.....	100 grammes	>100 grammes	65 grammes
Amidol.....	30 “	33 “	28 “
Glycin.....		0.2 “	traces
Hydroquinone.....	6 “	14 “	4 grammes
Eikonogen.....	7.8 “	17 “	4 “
Chlorhydroquinone.....	7.4 “	11 “	0.8 “
Metol.....	8 “	9 “	2 “
Pyro.....	59 “	>100 “	59 “
P.-a.-p. hydrochloride...	36 “	52 “	0.75 “

(Nothing is said as to the purity of the investigated substances.—Abstractor.)

## The Handling of Film Negatives

G

Il Prog. Fot., 1919, p. 245

Gives general directions for the use of films. The author does not consider that development by time is entirely satisfactory; he recommends that each exposure be developed separately in order to control the development according to the exposure which the film has received. Directions and formulae for treatment in this way are given.

## Washing Out of the Fixing Bath from Negatives

G7

Phot. Rund., 1918, p. 47

With reference to the work of A. V. Elsdon (*B. J.*, 1917, p. 120) and his conclusion that for all practical purposes four successive washings of two minutes each with intervening drainings suffice for removing hypo from a plate, Lüppo-Cramer has pointed out that this result is true only when a plain hypo fixing bath is used. With baths containing bisulfite, etc., such as those in ordinary use, much more protracted washing is essential.

## Reversal of Film Negatives

H. L. Larsson

G8

B. J., 1919, p. 611

A correspondent gives an account of an occasion on which six exposures were made on a roll of film in the heat of the Jordon Valley, five of which developed into good negatives and a sixth into a good positive.

## Reversing Action

G8

Camera, Nov., 1919, p. 603

Examples of photo-chemical reversal.

## Selective Reduction with Bichromate E. G. Simpson H1—1653

B. J., 1919, p. 571

Explanation, illustrated with diagrams, of the use of the chromium reducer.

## The Use of Permanganate in Intensification

H2

Phot. J. Amer., 1919, p. 527

Redevelopment in any organic developer after bleaching in a potassium permanganate-hydrochloric acid bath is stated to give intensification.

## Transferring Titles

H6

B. J., 1919, p. 574

A suggestion for transferring a title by printing the lettering upon hard paper with a dye ink and then transferring it to the wet negative film by laying the paper on the written title and allowing the dye to transfer to the gelatin.

## How to Develop Faintly Printed Prints

J2

Phot. J. Amer., 1919, p. 522

Instructions for developing P. O. P. prints.

## Finding the Correct Time of Exposure for

J. Kirchgassner

J3

Development Papers and Lantern Slides

Phot. Rund., 1918, p. 324

This is the description of a simple sensitometer.

## Practicus in the Studio—Combination Printing

J5

B. J., 1919, p. 587

A useful summary of the various methods used in professional photography.

## Blue Toning by Means of Molybdenum

A. Diebl

J82

Phot. Rund., 1918, p. 125

This is a modification of the method of Namias. Solution I: Fifteen grammes of ammonium molybdate with 18 grammes of either ammonium nitrate or ammonium chloride are dissolved in 100 cc. of water; this solution is allowed to run, with stirring, into a mixture of 25 cc. of fuming hydrochloric acid and 30 cc. of water; and any precipitate that forms is then filtered off. Solution II: Ten grammes of potassium metabisulfite are dissolved in 100 cc. of water. Immediately before use, 3 parts of solution I are mixed with 1 part of solution II. The mixed solution is not stable, molybdenum blue separating out in time. By means of this bath, tones ranging from a greenish black through steel-blue to a pure blue may be obtained.

# The Production of Perfect Sepias J84

B. J., 1919, p. 563

The most common faults of bad sepia prints are stated to be muddiness and poor quality of color, double tones, spots, blisters, washiness, and heaviness gained in drying. Directions are given for the avoidance of these troubles.

# Hypo-Alum versus Sulfide Toning P. A. Peachey J84

B. J., 1919, p. 579

Letter strongly recommending the hypo-alum process.

# A New Method of Toning Lantern Slides J88

De Camera, April, 1919, p. 96

A positive and a negative plate are made, the latter is bleached and toned by the pinatype process, and the two plates are then bound together.

# Methods for the Dye-Toning of Lantern Slides J88

B. J., 1919, p. 598

Deals with the Traube process and its successors as used for lantern slides and cine film.

# The Air Brush in Photography G. F. Stine L4

Abel's Phot. Weekly, Oct. 4, 1919, p. 324

Beginning a series of illustrated articles on the subject.

# On the Varnishing of Astronomical Negatives E. E. Barnard L6

Popular Astronomy, Oct., 1919, p. 487

An article calling attention to the importance of varnishing astronomical negatives; also a description of the method used for large plates and for small spectrograms.

# Mounting Photographic Prints on Cloth D. G. A. N1

Phot. J. Amer., 1919, p. 528

# An Aid to Mounting and Mount Cutting V. Jobling N1

B. J., 1919, p. 622

The author has made a bisecting rule in which the zero is at the middle, and the divisions are marked so that when the two edges of the print read the same the marking shows the width in inches. It is convenient for mounting prints so that the side margins are of equal width.

# Landscapes with Clouds J. Jurz 021

Phot. Rund., 1918, p. 356

The author treats of the influence of various sky filters on various plates, and specifies how a sky filter should be constructed.

- Practicus in the Studio—Printing Portrait Negatives 031—J3  
B. J., 1919, p. 559

Interesting as showing the view of the British professional, who uses chiefly bromide paper. The following quotation is interesting: "Gaslight papers vary greatly in quality of image, and I have not found them to be so satisfactory for portrait work as bromide. The shadows as a rule are too heavy and the color too cold, while some do not take kindly to sulphide toning."

- Keeping Track of Orders A. Gandy 0311  
B. J., 1919, p. 594

A photographer's letter describing his card index system.

- Practicus in the Studio—Flashlight Portraiture 0314—0581  
B. J., 1919, p. 617

Deals with the conditions which must be observed for successful lighting, and advises various expedients for dealing with the ignition of the powder and the smoke.

- Efficiency in the Workroom H. G. Stokes 0316  
B. J., 1919, p. 575

Description of the method used by the writer in his printing and enlarging room, containing a number of useful hints as to details of the work.

- Practicus in the Studio 0318  
B. J., 1919, p. 577

Wedding Groups.

- Some Suggestions on Photography of Tile Work 032  
Amer. Phot., 1919, pp. 496, 556

Reprint from booklet of the same name by the Associated Tile Manufacturers giving valuable hints on the photography of tile work, besides being an excellent *résumé* of the general principles which underlie all commercial photography.

- Yellow Spots on Pictures on Development Papers 041  
Phot. Rund., 1918, p. 79

Such spots originate in the use of old developer and old fixing bath. According to Cobenzl, they can be removed by means of potassium permanganate solution.

- Some Further Notes on Tracing Defects in Negatives 041  
B. J., 1919, p. 582

The article deals chiefly with the diagnosis of the origin of white spots. Various causes which may produce such spots in the handling of plates are given.

**Dampness and Faded Prints****041**

B. J., 1919, p. 574

The effect of dampness in producing print fading.

**Relief Photography**

F. Hansen

**044**

Phot. Ind., 1919, p. 493

The author reviews briefly the various processes of photo-sculpture, and mentions as a new process that proposed by the Relief Photo Company of Berlin. This is stated to give good results, and to be worked from a single paper print.

**The Measurement of Exposure When Using Yellow Filters**

Blochmann

**0561—2661**

Phot. Ind., 1919, p. 509, from Phot. Rund., 1919, p. 188

The author measures the factor of a filter by the use of a stereoscopic camera, the two exposures with and without the filter being taken at the same time and having the same duration, and the factor being measured by the extent to which it is necessary to close the diaphragm of the unscreened lens.

**Still Another System**

F. C. Davis

**057**

Photo Era, Nov., 1919, p. 249

An empirical formula for quickly determining the distances between copy, lens and focal plane in enlarging, reducing and copying operations.  $D'' = 1.2 (F \times T)$ , where  $D''$  = distance from copy to focal plane,  $F$  = focal length of lens and  $T$  = times enlargement.

**On the Reproduction of Papyri**

A. Alinari

**057—081**

Rivista d'Ottica, 1919, p. 16

For the reproduction of Greek manuscripts the author has used plates sensitized with Wool Black 4B, employing at the same time a filter made with Methylene Blue.

**Practicus in the Studio****0581**

B. J., 1919, p. 601

Flashlight Work.

**Aerial Photography at the Front**

E. J. Steichen

**083**

Camera Craft, Oct., 1919, p. 383

**Enlarged Diagrams****089**

B. J., 1919, p. 573

Recommends for class work the enlargement of diagrams to a uniform size on bromide paper. Such prints can afterwards be varnished and used on the wall.

- Sensitizing Canvas "Old Photo" 089  
B. J., 1919, p. 594

Gives details of a method used for many years as a secret process by Mr. A. Brothers.

- On Photographic Spectrophotometry K. Schaum 093  
Phot. Ind., 1919, p. 594 .

V. Henri's method of photographic comparison for constant  $E$  with  $t$  varied is discussed in relation to failure of the reciprocity law, and a method with  $t$  constant and  $I$  varied suggested. Comparable ray-bundles from the same source are obtained by Fresnel (parallelepiped) bi-prism, and variation of  $I$  secured by reflection from matte or polished glass plates. It is stated that satisfactory results were obtained for the molecular extinctions of a number of solutions.

- The Photographing of Etched Sections of Steel F. B. Foley 0941  
Forgings at Low Magnifications  
Chem. Met. Eng., Aug., 1919, p. 140

Describes the apparatus used to photograph specimens by vertical illumination to magnifications of about seven diameters. Vertical illumination is secured by means of a transparent reflector (plain glass) placed between the specimen and the camera at an angle of  $45^\circ$ . The photograph is made through the reflector. The light source is a 400-watt lamp in a stereopticon lantern. A diffusing ground-glass screen is interposed between the lantern and the reflector. Half-tone examples are shown.

- Development Papers with Copper Salts /81  
Phot. Rund., 1918, p. 46

A plain gelatin coated paper is bathed in the following solution:—

Ammonium dichromate.....	8 grammes
Water.....	200 cc.
Potassium dichromate.....	7 grammes
Copper sulfate.....	8 "

It is then dried in the dark-room and exposed under the negative until all shadow details are visible, washed, and developed in 1% "pyro" solution. The developed image is sepia.

- Carbon Printing for Professionals /82  
Phot. J. Amer., 1919, p. 500

/84  
At the Croydon Camera Club Mr. H. F. Farmer demonstrated "Carbro" printing, this being a new process having a close resemblance to Ozobrome.  
B. J., 1919, p. 578

- The "Carbro" Printing Process H. F. Farmer /84  
B. J., 1919, p. 583

This gives working details of the modification of the Ozobrome process worked out by the author. Ordinary carbon tissue is soaked in a bleaching solution consisting

of a single bath, the formula for which is given, and the process allows the introduction of greater or less contrast by a simple modification. Details for the working of different colored tissues are given.

Measurement of the Gloss of Photographic Papers K. Kieser 13  
Phot. Ind., 1919, p. 594

Kieser makes use of the reflection polarization of natural (unpolarized) light depending upon the gloss of a surface. It is stated that the degree of plane polarization determines the gloss. Measurements are made with a Martens polarization photometer. The surface should be weakly colored.

Substitutes for the German Names of L. P. Clerc 15314  
Developing Agents  
Bull. soc. franç. phot., 1919, p. 220

The French Chamber of Photographic Manufacturers and Dealers has adopted the name *Génol* in place of *metol* and *Iconyl* in place of *glycin*. These names have been registered, but all manufacturers or dealers of the allied nations are free to use them provided that they are not attached to material from the central powers, are restricted to the two chemical substances to which they are applied, and that the label on which the name is printed shall bear the name of the responsible agent.

Mercury Intensifiers 1651  
Phot. Rund., 1918, p. 139

The various mercury intensifiers are specified and critically discussed.

Recipes for Negative Varnishes 1691  
Phot. Rund., 1918, p. 141

Various recipes for negative varnishes (warm, cold, alcoholic, benzene, carbon tetrachloride and ether varnishes) are given.

Projection in Daylight D. Agnola 224  
Il Prog. Fot., 1919, p. 264

Analysis of the conditions which must be fulfilled in order to produce satisfactory results.

Efficiency in the Work Room H. J. Stokes 24—J5  
B. J., 1919, pp. 588, 603

Further suggestions for small items of work-room equipment, including a revolving desk for print trimming, the arrangement of retouching desks, and a chart for records of mounts in stock. The last article shows the author's embossing board, press for flattening prints and methods of printing parts of two negatives into each other in order to make a combination print.

Amateurs' Film Spools

A. O. Yardley 2653

B. J., 1919, p. 570

Complaint from an English finisher as to the number of customers who bring in spools of films that are the wrong size for their cameras. In one case a customer had re-spooled the film on to another spool in order to make it fit his camera. Urges dealers to be more careful in supplying the correct film.

Offset Lithography and the Photo-Engraver G. R. Mayer 0723

Photo-Engravers' Bulletin, Sept., 1919, p. 29

An account of the methods and machinery used in offset work in relation to their effect on the photo-engraver.

On Half-Tone Dot Formation by Copying Meusser 07332

Chem.-Zeit. Übersicht, 1918, p. 116, from

Zeits. f. Reproduktionstech., 1917, p. 10

In the ordinarily used half-tone process the clear points of the screen act like a pinhole camera, giving a diffused margin to every point of the image. This result may also be obtained by printing from the negative through the screen on to a bichromated colloid film; and the various ways in which this may be done are described.

Photographic Materials and Processes

B. V. Storr

B. J., 1919, p. 605

The third annual report on the progress of photographic manufacture compiled for the Society of Chemical Industry.

## 2. Physics

Studies in Conductivity. V.—Notes on the H. I. Schlesinger and

Measurement of the Conductivity of Solutions F. H. Reed

J. Amer. Chem. Soc., 1919, p. 1727

The authors used in conjunction with the high-frequency circuit a Leeds & Northrup condenser which permits placing equal capacities in series with the two lines of the circuit; by means of a 2-way switch the condenser could be eliminated. It was observed that the introduction of the condenser, while it improved the sharpness of the minimum, decidedly shifted its position, and that the magnitude of the shift depended on the type of resisting medium and on the magnitude of the resistance. This shift was eliminated by having capacities in two sides of the circuit unequal.

Simple Tests for the More Important Defects of a Lens E. W. Karpinsky

Phot. Rund., 1918, p. 105

The author states methods by which any photographer may examine his lens for chromatic aberration, spherical aberration, coma, curvature of field, astigmatism, veil, errors of centering, flare, distortion and vignetting.

- Optical Conditions accompanying the Striae    A. A. Michelson    1413  
which Appear as Imperfections in Optical Glass  
Sci. Papers Bur. Stand., No. 333

The author divides the striae in optical glass into two classes and discusses methods of investigating each class.

- Visibility of Bright Lines    L. Bell  
Science, Oct. 3, 1919, p. 331

This article deals first with the visibility of single spots, both black and white, against various backgrounds. In the case of diffuse reflection by the objects, they can be detected by an average observer down to a diameter of 30". In the case of specular reflection, as from a heliograph mirror, signals have been picked up from a mirror subtending only 0".2. Bright and dark lines against contrasting backgrounds are then discussed and a dark line against a bright background is found to disappear at values ranging from 0".44 to 0".86, according to the observer. A bright line against a dark background gives nearly the same results. These results indicate that for a linear object with strongly contrasting background the lower limit is less than  $\frac{1}{2}$  of that for a round spot of similar contrast.

- Reflecting Power of Stellite and Lacquered Silver    W. W. Coblentz  
and H. Kahler  
Sci. Papers Bur. Stand., No. 342

Gives the data on the latest production of stellite, and on lacquered silver mirrors before and after exposure to ultra-violet radiation.

- Some Optical and Photo-Electric    W. W. Coblentz and    011  
Properties of Molybdenite    H. Kahler  
Sci. Papers Bur. Stand., No. 338

An examination of electrical conductivity, spectral photo-electrical sensitivity, transmission and reflecting power of molybdenite under various conditions of temperature, humidity and intensity of the exciting radiation. The article also includes a short summary of previous work.

- Spectral Photo-Electric Sensitivity of    W. W. Coblentz and    011  
Silver Sulfide and Several Other Substances    H. Kahler  
Sci. Papers Bur. Stand., No. 344

The other substances examined were bismuthinite, galena, cylindrite, pyrites, and jamesonite. Only the sulfides of silver and bismuth showed photo-electrical sensitivity when exposed to radiation extending from 6000 to 30000 Å. U.

- Photo-Electric Spectrophotometry by the Null Method    K. S. Gibson  
Sci. Papers Bur. Stand., No. 349

The author describes the apparatus, which has been in continual use since April 1918, and has been proved to be quickly and easily operated, accurate and quite free from the necessity of tests, calibrations or corrections.

- A Photo-Electric Theory of Color Vision J. Joly 011  
Nature, 1919, 104, p. 74

A brief reference to a paper communicated by Sir Oliver Lodge to the British Association, in which he suggests that light absorbed in the black pigment may stimulate certain atoms into radioactivity and so cause the sensation of light. A brief discussion of the paper follows.

- A Photo-Electric Theory of Color Vision O. Lodge 011  
Nature, 1919, 104, p. 92

An answer, in part, to the above letter of J. Joly, containing valuable advice for the carrying out of experimental work on the subject.

- Aether and Matter: being Remarks on Inertia, and on O. Lodge  
Radiation, and on the possible Structure of Atoms  
Nature, 1919, 104, pp. 15, 82

An amplified discourse on inertia, the possible structure of atoms, and radioactivity, with remarks on the quantum and numerous other sub-topics of the subject.

- Relation between General X-Radiation and the W. Duane and  
Atomic Number of the Metal of the Target T. Shimizu  
Phys. Rev., June, 1918, p. 491

The authors conclude that the intensity of the general X-radiation is proportional to the atomic number, not to the atomic weight, of the radiator.

- On the Calculation of Two-Lens Achromatic Objectives P. Martinez  
Rivista d'Ottica, 1919, p. 18

The first portion of a series of articles on this subject.

### 3. Chemistry

#### (A) Physical and Inorganic Chemistry

- Action of Sodium Thiosulfate F. Diéneret and F. Wandenbuleks  
on Hypochlorites  
Comp. rend., 1919, 169, p. 29

The experiments were undertaken with the object of determining the exact amount of thiosulfate required to remove the excess chlorine from javellized potable water. It was found that when the water is alkaline or neutral the reaction proceeds according to the equation:  $3\text{Na}_2\text{S}_2\text{O}_3 + 5\text{NaOCl} = 2\text{Na}_2\text{SO}_4 + \text{Na}_2\text{S}_4\text{O}_6 + 5\text{NaCl}$ . While in the presence of a free acid—even carbonic—not even a trace of tetrathionate is formed but the reaction is:  $\text{Na}_2\text{S}_2\text{O}_3 + 4\text{Cl}_2 + 5\text{H}_2\text{O} = 2\text{NaHSO}_4 + 8\text{HCl}$ .

The Effect of a Film of Oil on the Aeration of Water H. F. Stephenson  
Analyst, 1919, p. 288

Approximately the same amounts of dissolved oxygen were found in samples of water boiled and then cooled under a layer of kerosene and left open to the air as in untreated samples left open to the air.

The Bourdillon Water Still J. P. Bennett and J. G. Dickson  
Science, Oct. 24, 1919, p. 397

Description and use of this still for the production of an abundant supply of "conductivity water". With a single distillation, water with a specific conductivity of  $0.4 \times 10^{-6}$  mhos has been obtained from tap water.

Studies of the Adsorption of Gases by Charcoal. I H. B. Lemon  
Phys. Rev., Oct., 1919, p. 281

It is shown that both the rate of adsorption and the amount adsorbed can be varied over a wide range by the previous heat-treatment of the charcoal. The behavior after various treatments is studied, the results being shown by graphic charts. An attempt is made to explain the phenomena observed.

Some Properties of Commercial Silicate of Soda J. G. Vail  
J. Ind. Chem. Eng., 1919, p. 1029

Descriptions of physical properties of sodium silicates which vary from those containing excess of alkali to those containing large excess of silica.

The Verification by Bodenstein of My Theory of M. Trautz  
Reaction Velocity in the System  $2\text{NO} + \text{O}_2$   
Chem. Abst., 1919, p. 2306, from Zeits. f. Elektrochemie, 1919, 45, p. 4

The author has previously advanced the theory that gaseous reactions proceed by means of collisions between molecules which are in an activated condition (*Zeits. anorg. Chem.*, 1918, 102, p. 81). He now shows how the measurements of Bodenstein and his associates on the reaction between nitric oxide and oxygen furnish a complete and satisfactory verification of his theory. The reaction is of the second order, as demanded by the theory, and the temperature-coefficients as calculated agree with the observed values.

"Biakametal" See 4.

Spectral Photo-Electric Sensitivity of Silver Sulfide and Several Other  
Substances (W. W. Coblentz and H. Kahler) See 2

Some Optical and Photo-Electric Properties of  
Molybdenite (W. W. Coblentz and H. Kahler) See 2.

Use of Strontia instead of Lime in the Bleaching of Cotton  
(R. Weiss) See 3D.

**(B) Analytical Chemistry****Reaction of Thiosulfates with Iodine**

I. M. Kolthoff

J. Chem. Soc., 1919, p. ii. 365

In neutral or feebly acid solutions the reaction takes place according to the usual equation:  $2\text{Na}_2\text{S}_2\text{O}_3 + \text{I}_2 = \text{Na}_2\text{S}_4\text{O}_6 + 2\text{NaI}$ . In feebly alkaline solutions part of the thiosulfate is oxidized directly to sulfate, and in sufficiently strongly alkaline solutions all the thiosulfate may in this way be oxidized to sulfate. In acid solutions the reaction is as in neutral ones, the decomposition of the thiosulfate by the acid being slow in comparison with the formation of tetrathionate.

**Device for Guarding against Over-Titration**

O. Hackl

J. Chem. Soc., 1919, p. ii. 370, from *Zeits. anal. Chem.*, 1919, 58, p. 194

A 25 cc. pipette having practically no stem below its cylindrical bulb and having a length of rubber tubing on its upper stem is placed in the solution to be titrated. The pipette is filled, the tubing closed with a pinchcock, and the titration proceeded with until the solution is slightly over-titrated; the contents of the pipette are then allowed to flow back into the main portion of the solution, and the titration is continued cautiously until the end-point is reached.

**Rapid Electrometric Determination of Iron in Optical Glasses**

J. B. Ferguson and 1413

J. C. Hostetter

Chem. Abst., 1919, p. 2580

The iron, in hydrochloric acid solution, was first reduced with stannous chloride and then titrated with potassium dichromate. Upon plotting e. m. f. against volume of oxidizer solution, the curve showed two inflections, indicating respectively the oxidation of the excess stannous chloride and that of the ferrous iron.

**Estimation of Iron by means of Permanganate**

L. Brandt

J. Chem. Soc., 1919, p. ii. 373, from *Chem.-Zeit.*, 1919, p. 373

The author finds that the use of colloidal silica as recommended by Schwarz and Rolfe (*Chem.-Zeit.*, 1919, p. 51) to delay the action of hydrochloric acid on permanganate in the titration of ferrous salts is untrustworthy.

**Adsorption by Colloidal Copper Sulfide**

K. Scheringa

J. Chem. Soc., 1919, p. ii. 367

A study of the simultaneous precipitation of zinc sulfide with the copper sulfide in the separation of copper and zinc. The amount of zinc carried down diminishes rapidly with either increase of acid concentration or rise of temperature. The author concludes that the zinc is not adsorbed by the copper sulfide gel, but that at the moment of precipitation a solid solution of zinc sulfide in copper sulfide is formed.

**Quantitative Estimation of Starch in Paper**

V. Voorhees and O. Kamm

Paper, Aug. 27, 1919, p. 15

The process consists in extracting with a 2½% solution of acetic acid. The starch is then hydrolyzed and determined by Fehling's solution.

The Bourdillon Water Still (J. P. Bennett) See 3A.

The Estimation of Fibers in Paper (R. C. Griffin) See 3D.

The Effect of a Film of Oil on the Aeration of Water (H. F. Stephenson)  
See 3A.

### (C) Colloid Chemistry

Amphoteric Colloids. III.—Chemical Basis of the J. Loeb  
Influence of Acid on the Physical Properties of Gelatin  
J. Chem. Soc., 1919, p. i. 295

The influence of the presence of hydrobromic acid, and that of subsequent neutralisation with sodium hydroxide, were studied. It was shown that gelatin is an amphoteric colloid which is sparingly soluble in water at its isoelectric point, while conversion into a salt makes it soluble.

Amphoteric Colloids. IV.—The Influence of the Valency J. Loeb  
of Cations on the Physical Properties of Gelatin  
J. Chem. Soc., 1919, p. i. 296

The curves representing the influence of lithium, sodium, potassium and ammonium on the osmotic pressure and other physical properties of gelatin were found to be identical. This contradicts the statements current in colloid chemistry, according to which these four cations have different effects. The curves for calcium and barium gelatinates were also identical, but differ from those for the univalent metals examined. The ratio of maximal osmotic pressures of these two groups was 1:3.

Amphoteric Colloids. V.—The Influence of the Valency J. Loeb  
of Anions on the Physical Properties of Gelatin  
J. Chem. Soc., 1919, p. i. 418

Curves representing the influence of monobasic acids (hydrochloric, hydrobromic, nitric and acetic) on the osmotic pressure, swelling and viscosity of gelatin solutions are practically identical, whereas those representing the effect of sulfuric acid are much lower, and stand very much in the same relation to the curves of the monobasic acids as do the curves for calcium gelatinates to those for sodium gelatinates. The curves for oxalic, tartaric, succinic, citric and phosphoric acids, however, are practically identical with those for the *monobasic* acids.

Leather Dyeing L. G. Hayes  
Color Trade J., Oct., 1919, p. 108

This paper deals with the different kinds of tannage, the dyeing properties of leather, the preparation of the dye baths, etc. (Details such as these of operations in the production of leather are of considerable interest as having usually their counterpart among photographic operations involving gelatin and particularly in color photography.—Abstractor.)

**"Dry" Mordanting of Dyes**

M. Fort

J. Soc. Dyers Colorists, 1919, p. 100

The author has used a (blue) ethereal solution of perchromic anhydride. From such a solution fresh wool extracts all the chromium and may then be dyed either in aqueous solution or by the "dry" dyeing (*J. Soc. Dyers Colorists*, 1918, p. 226, and *this Bulletin*, 1919, p. 76) process.

(Colloid Silica in the) Estimation of Iron by means of Permanganate  
(L. Brandt) See 3B.

Adsorption by Colloidal Copper Sulfide (K. Scheringa) See 3B.

The Constitution of Organic Dyestuffs and Their Light-Sensitiveness  
under the Influence of Anethol and Other Sensitizers (P. R. K gel)  
See 1.

Leather from Aquatic Animals (L. Bell) See 4.

Reaction of Thiosulfates with Iodine (I. M. Kolthoff) See 3B.

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**(D) Organic Chemistry**

Use of Strontia instead of Lime in the  
Bleaching of Cotton

R. Weiss

J. Soc. Chem. Ind., 1919, p. 715A.

A comparison of three alkali earths was made by boiling cotton fabrics contaminated with oil stains. Strontia in equimolecular proportions was found to saponify the oils three times as rapidly as lime, and the bleaching effects were superior.

The Estimation of Fibers in Paper

R. C. Griffin

J. Ind. Eng. Chem., 1919, p. 968

A discussion of the two methods used—the count method and the estimation method. The author claims the latter is the better method. Tables are given.

## 4. Technology

### "Biakametal"

Brass World, 1919, p. 270

A new alloy of zinc and copper. Its exact composition is unknown. It is stronger than steel and less corrosive than copper. It has the highest known breaking point, the highest limit of elasticity, perfect homogeneity and high resistance to thermic and chemical action.

A New Absorbent for Ammonia  
Respirators

G. St.J. Perrott, M. Yablick and  
A. C. Fieldner

J. Ind. Chem. Eng., 1919, p. 1013

Pumice stone impregnated with copper sulfate. A canister containing 45 cubic inches of this material will protect a man breathing at rest for at least 5 hours against 2% ammonia, and for 2½ hours against 5% ammonia. Several other substances—cobalt chloride, ferrous sulfate, boric and silicic acids—are also good absorbents.

### Leather from Aquatic Animals

Science, Oct. 24, 1919, p. 389

A note concerning the production and commercial uses of leather from aquatic animals.

The Royal Laboratory for Precision Work at Rome

R. A. Occhialini

Rivista d'Ottica, 1919, p. 3

This laboratory was founded during the war under the direction of General Righi for the production of optical munitions. The chief instruments made there were field glasses, hyposcopes, and sights of various types. The laboratory also conducted investigations on the manufacture of optical glass by means of which the glass needed was eventually made in Italy.

## From Eastman Kodak Research Laboratory

Low Visibility Phase of Protective Coloration

L. A. Jones

J. Frank Inst., Sept. and Oct., 1919, pp. 363, 507

Communication No. 80

This paper deals with the practical phase of the work carried out in an attempt to determine the best possible means of obtaining a low visibility paint for use in the protection of vessels from submarine attack. This investigation was carried out in the Research Laboratory of the Eastman Kodak Company at the request of the Submarine Defense Association of New York, an organization whose activities were concerned with various methods of combating the submarine menace during the late war. In this paper only brief consideration is given to the theoretical problems involved and to the design and construction of an instrument by means of which the visibility of the models painted according to various low visibility schemes were measured. The larger part of the space is devoted to a discussion of the detailed results obtained.

The work was carried out at a station established on the shore of Lake Ontario, at which point a rack was erected on which small profiled models painted according to

various schemes were suspended and the visibility under a wide range of weather conditions determined. The results obtained on the set of models varying only in reflecting power were such as to confirm the theoretical conclusions previously reached. It was conclusively shown that in order to obtain low visibility the reflecting power of the paint used should be such that when illuminated by the natural lighting conditions under which the examination was made the brightness of the surface protectively colored should be equal to that of the background against which it was viewed. The examination of several different schemes proposed for obtaining low visibility by the application of colored paints to a ship in various manners showed that such schemes were of no particular value. The contention of the exponents of these systems that the surfaces on which the desired color and brightness was obtained by juxtaposition of various colors would have a lower visibility than the surfaces painted with a solid color of the same resultant color and brightness was proved to be without foundation. Specifications were determined for the paint which would give the minimum average visibility when used in the zone of greatest submarine activity and for a second paint particularly adapted for use in the more southern danger zones such as the Mediterranean. The former was a bluish-green-gray having a reflecting power of approximately 45 per cent and a relatively low saturation. The latter was of practically the same saturation, slightly bluer in hue, but having perceptibly less reflecting power. Finally, two components were determined which when applied to equal areas of the surface would at a distance blend into the color giving the lowest average visibility.

### Stability of Intensified Wet Plates in Acetic Acid

#### Report No. 735

Ten per cent acetic acid is used as a collodion stripping agent. Experiments were made to ascertain whether it would affect the image of intensified wet collodion negatives; no effect was observed on mercury-bleached negatives blackened with sodium sulfite, Schlippe's salt, or ammonia.

### Tests on Film-Tinting Dyes

#### Report No. 762

Tests were made to determine if the new samples of film tinting dyes as issued by the National Aniline & Chemical Company compare favorably with the samples tested over two years ago, on which tests the recommendations in the booklet "Tinting and Toning of Eastman Motion Picture Film" were based.

The names of the dyes recommended in the above booklet have been changed by the National Aniline & Chemical Company as follows:

DYE	OLD NAME	NEW NAME
Cine Red	Serichrome Blue R.	Serichrome Blue R.
Cine Scarlet	Croceine Scarlet MOO	Croceine Scarlet MOO
Cine Orange	Orange A Conc.	Wool Orange A Conc.
Cine Yellow	Niagara Fast Yellow F	Erie Yellow F
Cine Green	Ammaco Acid Green L	Acid Green L
Cine Blue	Buffalo Fast Blue R	Fast Wool Blue R

The tests showed that the quality of the tinting dyes recommended in the above booklet, as now supplied by the National Aniline & Chemical Company, is substantially the same as that of the samples which they submitted two years ago. The names of some of the dyes, however, have been changed, so that the necessary corrections should be made when ordering.

## Books

### Recent Accessions to the Library:

Solubilities of Inorganic and Organic Compounds A. Seidell  
D. van Nostrand Co., New York. \$7.50

Second edition (1919), enlarged and revised.

The Chemical Technology of Petroleum, Natural Gas, R. Kissling  
Ozocerite and Asphalt ("Chemische Technologie des  
Erdöls and der ihm nahestehenden Naturerzeug-  
nisse: Erdgas, Erdwachs und Erdpech")  
F. Vieweg & Sohn, Braunschweig

The book is intended to occupy an intermediate position between the large five-volume work of Engler-Höfer on the oil industry and Kissling's own small monograph on the subject. The treatment is comprehensive both in respect of the industry and technology, particularly in respect of the European and Asiatic mineral oils.

The Technology of Rubber ("Die Technologie R. Ditmar  
des Kautschuks")  
A. Hartleben, Vienna and Leipzig

A very complete treatise by the well-known rubber technologist.

## Patent Abstracts

(NOTE—The symbol appearing to the right and above each patent abstract is the index symbol according to the classification of photography in use at the Laboratory.)

### U. S. Patents

1316791 M. Handschiegl K/43

A Method of Making Colored Motion Picture Films in which alternate color records are made in a common way. All the records of one color are then reproduced upon a single film and those of another color upon another film. They are then transferred by imbibition one after another upon the positive film which is to be colored.

1317493 J. A. H. Hatt M0733

A process of making photo-mechanical screens from market screens or negatives of drawings by means of the ordinary fish-glue enamel process. (This method has been common knowledge for many years.—Abstractor.)

1317946 J. H. Snively X283

A Mount for Dental X-Ray Negatives consisting of a series of panels foldably connected, each having an opening and pockets for the insertion of a removable transparent card, which in turn carries by suitable slips the negative, the latter being in registration with the opening in the mount.

- 1317406 W. v. Siemens. 089  
Assigned to Siemens & Halske, Akt. Ges.

A Photographically Operating Typewriter. A series of templets consisting of photographic negatives or stencils of letters are located so that light passing through them will be projected upon a common point. A roll of photographically sensitive paper passes this point and there is a spark gap for each templet. A controlling band with a series of electrical contacts controls the actuation of these spark gaps to selectively project the letters upon the printing point.

- 1318610 L. R. Sereinsky 1212

Motion Picture Film in which perforations are provided in addition to those used in standard film and adapted for registration with teeth of a particular machine. The film is to be made of non-inflammable film and the registrations are to insure that only such film can be used on particular machines.

- 1317085 C. B. Knott 215

A Roll Film Camera designed for the severing and removal of a portion of the film for development.

- 1317034 F. A. G. Pirwitz 2152

A Quick Wind for roll film cameras in which special provision is made for compensating for the increase in the size of the takeup roll. A plurality of fixed stops is furnished, which, under the control of a selector, are successively engaged by the film-winding mechanism.

- 1318966 G. D. Clardy. 2156  
Assigned to N. T. Whitaker and to R. E. B. Wakefield

A Roll Film Camera having a spring-pressed guide for the film which is wound from one spool to the other by means of the usual hand key. An indicator moving with a sprocket shows when the film has been turned sufficiently. Motion picture film is used.

- 1317129 W. F. Folmer. 219  
Assigned to E. K. Co.

A Magazine Plate Camera designed particularly for use by aviators. The shifting mechanism, shutter release and magazine-detaching latch are so arranged that they can be operated with one hand by the user and with the least danger of improper manipulation.

- 1318803 J. A. Robertson and P. W. Tierney 219-083

A Gun Camera in which a magazine containing film is attached to a machine gun in exactly the same manner as the ammunition magazine. It is operated by the trigger of the gun so that the operation is identical with the discharge of the ammunition. Single exposures or bursts may be taken.

1318541 T. A. Campbell 221

A Compact Stereopticon including a removable condenser, focusing lens, and lamp box and a built-in magazine.

1317243 G. E. Tornsjö. 251

Assigned to National Novelty Co.

A Clip for handling film struck up from a single piece of sheet metal.

1317575 J. P. Hansen 2621

A Studio Shutter with hinged leaves folding over the lens. They have flanges which prevent light from entering from the sides.

1317213 P. G. Nutting 2645-2671

A Range Finder in which the object is observed from the ends of a base line in the instrument through two different color screens. When the images are registered, the object appears black, otherwise there will be color fringes.

1318155 H. E. Kingsley and G. C. Richmond 2671

A Range Finder, which consists of telescoping tubes. The location of a lens carried by one tube necessary to focus upon a ground glass carried in the other tube gives a reading of the distance from the subject, which datum may be then used in focusing the camera.

1317725 C. F. Pidgin 0631

A Device for use in showing speech in motion pictures. An inflatable tube has the words upon it and it is coiled and carried by a suitable support upon the side of the operator's head, which is away from the camera. By pressing a rubber bulb the tube is distended and projected into view, showing the words that the actor is speaking. Upon release of the bulb the tube coils up.

1317398 M. J. Shiels. 0632-352

Assigned to Motion Picture Apparatus Co., Inc.

An Apparatus for Testing Motion Picture Film by developing a small strip. It is intended for use in the field to ascertain whether or not the right exposure is being made. It consists of a flexible bag adapted to be attached to a film magazine and to draw therefrom a short section which can be carried in the light-proof bag to a proper developing tank and inserted into the same in daylight.

1317825 A. T. Saunders 0648

A Method of Producing Colored Motion Pictures. Motion picture film is made in the usual way. The individual views are projected singly upon a roll of paper upon which there are filled in by hand, preferably in black, the areas which, in the opinion

of the artist, record red. After all of the views have been reproduced in this red record there are similarly reproduced records for the other colors. These large-scale records are then reduced by photographing upon regular motion picture film, thus giving three-color records on normal sized film, which are then produced on a single film by any color printing process such as the collotype. Since the artist can work on a large scale it is possible to color individual details much more perfectly than when the film itself is colored by hand.

1317042

F. Seymour 31-321

A Motion Picture Apparatus designed for both taking and projecting. The shutter consists of a disk having concentric and radial series of openings which may be used to expose a series of different films at the same time. The movement of the shutter is intermittent rather than continuous and it is said that this reduces static. Special attachments for the production of "fade-away" and vignette effects are included. The film used is friction-driven and the picture area covers the entire surface. Special mounting is provided for taking panoramic pictures.

1314494

C. E. Akeley. 312

Assigned to Akeley Camera, Inc.

A Motion Picture Camera in which the magazine containing both the supply and takeup reels and the driving sprocket may be readily removed from the body of the camera.

1317502

L. Janot. 314

Assigned to Compagnie Générale des Établissements Pathé Frères

An Intermittently Operated Motion Picture Apparatus designed to take a relatively high number of pictures per second, for instance, 150. It consists of a reciprocating member carrying engaging hooks that pull the film past the stretcher frame. The film is stretched between the frame and takeup pinion at the beginning of the stroke and between the frame and the feed pinion at the end of the stroke.

1318552

V. M. Harris. 315

Assigned to Klix Mfg. Co.

A Motion Picture Camera in which a film magazine adapted for daylight loading is used within the camera. It consists of two separable compartments, in one of which the supply reel is placed loosely without any axle. The magazine oscillates about the axis of the takeup reel in synchronism with the intermittent motion.

1318868

V. M. Harris. 315

Assigned to Klix Mfg. Co.

Motion Picture Apparatus used for projecting and taking. When used for taking, the film is contained in a magazine within the camera, from which it is taken and to which it is returned. When used for projecting, the reels are above and below the apparatus. The means for guiding the film past the gate is given particular attention.

- 1318348 G. W. Bingham. 319  
Assigned to The Widescope Camera Co.

A Motion Picture Camera designed to expose several films simultaneously or separately. It is stated to be particularly useful for taking scenes too large to be included in a single view.

- 1317635 A. B. Mueller 3201

A Motion Picture Projection Apparatus in which special provision is made for mounting the sides of the loop of film in mesh with the driving pins. The intermittent drive is of the Geneva gear type.

- 1317637 A. B. Mueller 3202

A Motion Picture Projection Apparatus in which special provision is made for framing. The gearing as a whole is bodily adjustable.

- 1317636 A. B. Mueller 3206

A Motion Picture Projection Apparatus having the two lens components mounted on separate telescoping tubes, one of which is movable for focusing purposes, being operated by a lever handle.

- 1315821 S. E. Doane, R. P. Burrows and A. F. Sinclair. 3207  
Assigned to General Electric Co.

A Lamp Box for projecting purposes containing the two lamp sockets. When one lamp burns out, the casing is automatically turned to place a second lamp in proper position. While one lamp is properly burning another may be installed in a reserve position and focused. The casing is shown used with motion picture apparatus.

- 1318020 C. G. Skillin 3208

A Film Rewinder in which the used film is fed toward the center of the spiral so that the rewound film may be used immediately without another rewinding.

- 1314055 H. Francis 3208

A Rewind for Motion Picture Film driven by an electric motor which is automatically cut out when the rewinding is completed.

- 1317404 W. M. Thomas. 3208  
Assigned to Thomas-Oberkirch Co., Ltd.

A Reeling Apparatus for Motion Picture Film. The feed and takeup reels are in contact with each other and their axes are slidable in common slots. As one reel contracts the other expands and their axes move relative to each other.

- 1318203 H. Granville and F. Koch 3209

A Safety Device for Motion Picture Machines. If the film breaks, a door is closed, cutting out the projecting light and at the same time breaking the circuit to the motor and the source of light.

1317634 A. B. Mueller 32

A Casing Structure for Motion Picture Projectors. The motion picture reel, the lenses and shutter are mounted upon a frame hinged within the casing and adapted to be swung out therefrom.

1317043 F. Seymour 321

A Motion Picture Projector by which several pictures may be simultaneously shown or by which a spot light or fixed projector may be used simultaneously with one or more motion pictures. An intermittently revolving disk shutter having radial and concentric series of openings is employed. Provision is made for the actuation of a series of films in one direction through the machine and at the same time rewinding another series of pictures. The machine may be reversed to rotate the shutter in the opposite direction and drive all the films in the opposite direction, exposing those which were formerly being rewound and rewinding those previously exhibited. For the reduction of flicker the projecting light is interrupted during each picture placement.

1316669 S. Bardy 322

A Motion Picture Apparatus in which the film moves continuously. The projecting light passes through the film and a fixed lens system and through movable lens sections which are relied on to give the optical rectification. These lens sections are mounted upon a drum revolving around the entire casing and constitute practically a series of very long focus lenses passing in front of the lens system in timed relation with the picture areas.

1317450 H. H. Momyer 322

A Motion Picture Projector in which the film moves continuously. The projection is made from two arc lights through two half lenses, these being divided on a vertical line and moving up and down, both having the same optical axis. The pictures are projected during the upward movement of a half lens, the lens being covered during its return. When one lens is covered, the other is simultaneously uncovered and they carry on the projection alternately, there being no dark period.

1318016 M. Segel 322

A Machine for Projecting Motion Pictures in which the film moves continuously. A rotating disk with two eccentric slots forms the gate through which the pictures are projected. The compensating system consists of what appears to be three rectangular refracting prisms connected by links which oscillate synchronously with the movement of the film and the rotation of the disk.

1318269 H. W. Ekberg 322

A Motion Picture Projection Apparatus in which the film moves continuously and is reflected to the projecting screen from a continuously moving series of reflectors, the angular position of which changes slightly as the reflectors pass through the operative position.

- 1317996 J. H. Stillwaggon. 328  
Assigned to Auto Slyde & Moving Picture Machine Co., Inc.

An Automatic Projecting Machine, which is stated to be of use particularly for advertizing purposes, in which a reel of motion picture film is projected and then moved from projecting position and a series of stereopticon slides are then projected, the film being simultaneously and automatically rewound. It is then again moved to projecting position and the operation repeated.

- 1318889 I. McFadden 329

A Motion Picture Machine adapted either for projection or for visual inspection of the pictures. The film passes over a large drum, which is given intermittent motion and the shutter is placed before the viewing opening and operated synchronously with the motion of the drum.

- 1319026 V. C. DeYbarrondo 353

Apparatus for Treating Motion Picture Film. Long weighted loops of the film are suspended in tubes of sufficient number to take the entire scene at once. The developing fluid is admitted through stop-cocks and is drawn off after a proper interval of time. The fixing bath is admitted in a similar way, as is also the washing water. An inspecting window is provided so that the extent of development may be examined.

- 1314269 P. Kemoter. 389  
Assigned to Geuder, Paeschke & Frey Co.

A Fireproof Metal Shipping Case for Film.

## British Patents

- 131319 A. R. Lawshe K/42

Color Photography. Multi-color photographs are produced by (1) exposing two superposed plates or films through a screen in a camera to obtain separate color-record negatives, (2) preparing from these negatives positives having red and green images respectively, and (3) treating the green image at the parts corresponding to blue or colors containing blue in the original subject so as to render it blue. The red image may be a transferred carbon image on a paper support. The green image may be obtained by printing on blue carbon tissue which is sensitized in a bath containing non-actinic dyes to reduce sensitiveness and contrast, a suitable bath being naphthol B, 5 to 10 grains; amaranth, 5 to 7 grains; ammonium dichromate, 24 grains; water, 1 ounce; and ammonia, 20 drops. The blue image is transferred to a transparent support and the strengths of the images are tested and adjusted by placing them in register and further developing the darker one if necessary, the blue image being preferably developed further than the red one. The blue image is then treated in an alum bath, washed, and dyed in a yellow bath comprising preferably 1 to 2 grains of alizarine yellow to each ounce of water, the resulting green image being again tested against the red image, and the red image being further developed if necessary. The green image may alternatively be

obtained by using blue and yellow pigments in the tissue which yield a bright grass or emerald green image, or by printing in clear gelatin and dyeing the developed print in a blue dye followed by a yellow dye. The green image is then brushed over at the parts corresponding to blue and to colors containing blue in the original subject with weak hydrochloric or other acid to decolorize the yellow dye or pigment and produce a blue image at those parts. For transparencies and lantern slides the pigmented gelatin may be transferred, while in the sensitizing bath, to sheets of celluloid or other transparent material, and the celluloid, etc., may have a prepared surface, or the sensitizing bath may be made alcoholic, to ensure adhesion of the gelatin and celluloid, etc. The gelatin on the transparent base is then exposed and treated as described above. For cinematograph films, celluloid bases are used for supporting the sensitized gelatin, and the bases of the finished prints are united, with uncoated sides in contact, by passing the prints through a celluloid solvent and subjecting them to pressure.

131478

J. Shaw and J. W. Berwick K/43

**Color Cinematograph.** To color picture films having recurring series of component color images a waterproof resist, having spaced openings, is registered with the film. The resist is formed of rubber on a cloth or canvas back and is attached with the rubber face to the film. The joint film is passed through a color bath, the pictures under the openings being thereby colored. A second series of pictures can be colored in the same way by stepping the resist to expose another series. Alternatively, the pictures already colored can be mordanted or fixed, as by passing the joint film through a tannic acid bath, and the remaining pictures colored by removing the resist and passing the film by itself through a second color bath, the hardened pictures being unaffected.

131422

D. F. Comstock K3117

**Optical Systems.** Relates to a compound lens system for obtaining in the same plane two or more complemental images, *i.e.*, images in different colors and such that when superposed they produce an accurate color picture.

130603

W. V. D. Kelley and J. Mason K34

**Photography.** In apparatus for printing cinematograph films, registering pins are fitted on each side of the exposure gate and engage the sprocket holes of the negative and positive before each exposure, one of the pins registering the films longitudinally and the other pin registering the films transversely. The apparatus is more particularly for printing from negatives having recurring series of color components from which each color series is printed in superposition on the positive, accurate register being essential.

131163

V. A. Bruce X31—X06

**Roentgen-Ray Apparatus.** In apparatus for taking Roentgen-ray cinematograph films, the film is fed by an endless band under a table in which is an exposure opening. The film is kept in contact with the band by rollers. The band is intermittently fed by a toothed wheel driven by a belt from a clutch disk. The wheel is continuously rotated by a belt, and a cam intermittently actuates the clutch through connecting rods. A synchronized commutator operates to close the circuit through the tube during the rest period of the film.

## 130374 G. de Ram 219

**Cameras.** In a magazine camera, the plates are carried in a rotatable holder open at the front and back, and are changed by a complete revolution thereof, the plate to be changed being released so that it slides by its own weight on to a support outside the plate-holder, is retained there during a part of the revolution, and is then released so that it falls into position at the back of the holder.

## 130380 G. de Ram 219

**Cameras.** In cameras for use more especially on aircraft, in which a constant-speed motor operates through mechanism to cause exposures at regular time intervals, means are provided for varying the time intervals. The invention may be applied to any camera the working of which may be controlled by the rotary movement of any device, each revolution of such device corresponding to one exposure, and is described in connection with a camera having a rotating magazine as set forth in Specification 130374.

## 130684 C. M. Williamson 219

**Photographic Cameras.** Relates to improvements in cameras, as described in Specification 124225, in which interchangeable locking means is provided to allow of the camera being operated manually or by means of an air-screw. The object of the invention is to provide mechanism in which there are no removable loose parts.

## 130685 C. M. Williamson 219

**Photographic Cameras.** Relates to roll-film cameras of the type employed on aircraft for taking series of photographs; in these, a continuous film is passed with an intermittent travelling motion across the exposure aperture. According to the invention, the receiving spool is continuously rotated from the source of power while the rotation of the feeding spool is intermittent, a slipping clutch mechanism being interposed between the driving shaft and the receiving spool.

## 130502 H. A. McCallum 264

**Cameras.** A camera is provided with a view-finder consisting of a plate provided with a view aperture and with abutments adapted to bear against the operator's head.

## 130338 M. L. Godefroy 2682

**Photometers.** In an exposure meter based on the position of invisibility of a slot arranged between a viewing aperture and a screen of graduated opacity, a circular translucent screen having sectors of increasing opacity is viewed through a slot in a disk, the screen and disk being mounted in cylindrical carriers and relatively adjustable.

## 130671 F. L. Hough 3101

**Cinematograph Apparatus.** Two film-supporting members and an optical system are arranged with their axes parallel and means are provided for feeding film from a roll on one of the supporting members past the optical axis and to the other supporting member while maintaining a single loop of film turned inside out so that the portion near the optical axis lies in a plane at right-angles thereto.

130756 A. de Brayer 3103

**Cinematographs.** A shutter device for use in taking cinematograph pictures comprises flexible non-transparent bands capable of relative adjustment but driven together and provided with apertures the size of the pictures to be taken, the length of the opaque portions of the bands being equal to the sum of the widths of the pictures and the distance travelled by the sensitive film between successive exposures.

131149 G. G. B. Tartara 315

**Cinematograph Apparatus.** Relates to cinematograph cameras operated by clock-work and provided with mechanism whereby a series of motion pictures or a single photograph may be taken and consists in the employment of a notched rotary disk engaged by a stop carried by a lever controlled by either of two press buttons according as a series of pictures or a single picture is required. Counting mechanism is fitted and the camera may be used also for printing.

131203 L. Kamm 320

**Cinematograph Apparatus.** In projectors having a shutter of the cylindrical or drum type, means are provided for rotating the shutter around the axis of the wheel which drives it, and for varying the distance of the shutter from the projecting lens.

130290 T. Royle and W. Whitehead 3204

**Cinematograph Apparatus.** In a spool-holder for cinematograph apparatus, a small lever is mounted in the forked end of the driving spindle by a pin which passes through a slot in the lever. The lever has flat sides against which the side of the spool is pressed by a spring.

130326 S. F. Stein 323—069

**Cinematographs Combined with Phonographs.** In an apparatus for combining the projection of moving pictures and the reproduction of associated sounds, the phonograph record actuates a telephone transmitter which is in electric circuit with a number of telephone receivers, preferably one for each seat in the hall.

130894 O. E. Kellum 323—069

**Combined Phonographs and Cinematographs.** A complete cinematograph record and a phonographic record of the associated sounds are produced by first taking picture and sound records of sections of the complete performance, selecting desired portions from these records and identifying them by numbers indicated on counters on the shafts of the recording machines, piecing together the selected portions of the picture records, and transcribing the corresponding selected portions of the sound records on to a single record.

130260 H. A. de Vry 325

**Cinematographs.** A projector comprises a ventilated portable carrying case containing the lamp, driving-motor, film spools side by side, and a frame carrying the film feed mechanism and projecting lenses. The case has screened ventilating holes and

the shutter has fan-shaped blades to force air out through the projection opening. The motor is fitted with a suction fan which draws air in through a screened opening in the side of the case. Such air circulates through the chamber space and through and around the lamp casing.

131522

T. Royle and W. Whitehead 366

Cinematograph Apparatus. To keep the driving-chain of a cinematograph projector taut, an idler sprocket is pressed into, and kept in engagement with, the chain by a spring acting on the arm carrying the sprocket.

131473

A. T. Koppe 07235

Photography. Apparatus for printing press plates for offset printing.

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